SW416
Div of Waste Management
and Radiation Control

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PROMONTORY POINT
RESOURCES
an Allos Environmental company

December 20, 2017

Scott T. Anderson, Director
Division of Waste Management and Radiation Control
Utah Department of Environmental Quality
PO Box 144880
Salt Lake City, Utah 84114-4880

Re: Promontory Point Resources Class V Permit Application
Needs Assessment Report Addendum

Director Anderson:

This letter transmits a *Needs Assessment Report Addendum*. The purpose of this report is to supplement our permit application and expand on the *Needs Assessment Report* information submitted with the Promontory Point Landfill's Class V Permit Application (March 2017, Appendix L-1) and to address comments provided by your office on July 12, 2102. These comments were provided in a report titled *Evaluation of the Promontory Point Resources LLC, Needs Assessment Report* (SC&A, Inc., 2017).

With this supplemental information we believe the Permit Application contains all of the requirements of §19-6-108, (10) and (11) and applicable Solid Waste Rules. We respectfully request that DWMRC complete its review of our Class V Permit Application. Please make us aware of any additional deficiencies as soon as practical.

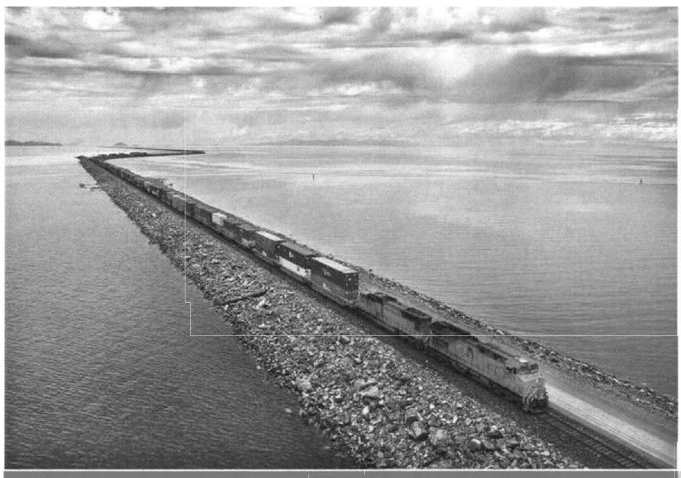
Thanks to you and your staff's time spent meeting and reviewing our application. If you have any questions on any of the Application materials please contact me or Ann Garner at (317) 457-4845 or ann.garner@allosenv.com.

Sincerely

Promontory Point Resources, LLC

Brett Snelgrove
Director- Utah Operations

ALLOS
ENVIRONMENTAL



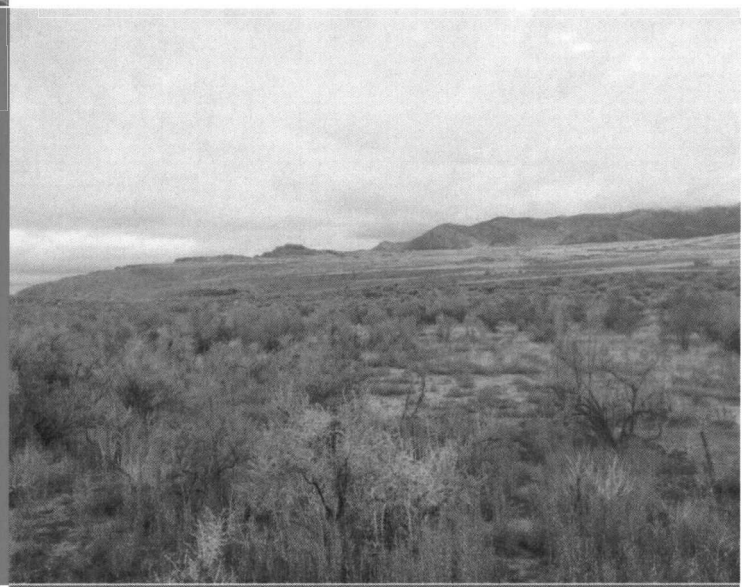
Needs Assessment Report Addendum

Promontory Point Landfill

Addendum to Class V Needs Assessment Report, Permit Application, March 2017 Appendix L-1

Box Elder County, Utah

December 20, 2017



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Acronyms and Abbreviations

Allos	Allos Environmental (parent company of Promontory Point Resources, LLC)
C&D	construction and demolition waste
DWMRC	Division of Waste Management and Radiation Control
I-15	Interstate 15
IRL	Intermountain Regional Landfill
MSW	municipal solid waste
NUERA	Northern Utah Environmental Resource Agency
PCBs	polychlorinated biphenyls
Promontory	Promontory Point Resources, LLC
RCRA	Resource Conservation and Recovery Act
SLVSWMF	Salt Lake Valley Solid Waste Management Facility
SUVSWD	South Utah Valley Solid Waste District
UP	Union Pacific Railroad
USEPA	United States Environmental Protection Agency

Executive Summary

Purpose of This Report

This *Needs Assessment Report Addendum* describes Promontory Point Landfill, presents the developmental history of the landfill, summarizes the economic benefits of the landfill to Box Elder County, provides an overview of the waste market that could use the landfill, presents the need for additional landfill capacity in the state, and presents the public and industry benefits that the landfill provides as a commercial facility (Class V non-hazardous waste facility) as required pursuant to Utah Code Title 19, Chapter 6, Part 1, Section 108, § 10 and § 11 of the Utah Solid and Hazardous Waste Act. This report also includes information requested during an August 10, 2017, meeting between Promontory Point Resources, LLC (Promontory, the landfill owner), and the Utah Division of Waste Management and Radiation Control (DWMRC) Director, staff, and DWMRC consultant (SC&A).

Promontory Point Landfill is a permitted Class I landfill located on the southern tip of the Promontory Point Peninsula in Box Elder County. The landfill has been permitted as a Class I facility since 2001, and construction of the initial landfill cell was completed in December 2017. When the landfill's road improvements are completed in the spring of 2018, the facility will begin accepting waste via truck, which is estimated to start in July 2018.

The Class V designation and the finalization of the on-site rail service from the adjacent Union Pacific Railroad main track will expand the landfill's wasteshed. Most heavy-industrial manufacturing facilities are rail-served, and Promontory Point Landfill will provide a cost-effective alternative for transporting many waste streams.

Local Support

According to a report published in 2017 by the University of Utah's Kem C. Gardner Policy Institute, Utah's population is projected to increase significantly, by 93%, over the next 50 years. Northern Utah's seven counties (Utah County and counties north) are projected to have 79% of the state's total population (5.8 million) by 2065. Annual waste volumes are expected to grow by 63% by 2050 and 88% by 2065 in the seven northern Utah counties. The increase in population and subsequent increase in waste will necessitate expanded waste-disposal options. Additionally, heavy industries in the region that are located far from disposal sites and are adjacent to a rail line, or waste consolidation point, will have a cost-effective disposal option of using the rail line to transport their waste to Promontory Point Landfill.

Box Elder County and the State of Utah recognize the need for and support the development of long-term waste-disposal infrastructure at Promontory Point Landfill. Box Elder County passed County Ordinance 422 amending its zoning to allow a Class V landfill. Box Elder County issued a Private Activity Bond for the construction of the landfill, and the landfill's Class V status was approved by House Joint Resolution 20.

Need for Promontory Point Landfill

Utah's communities demand low-price waste disposal. Market viability comes down to economics and the overall waste-disposal system costs for communities and businesses. System-wide costs include collection, transportation, and disposal costs. Promontory can guarantee airspace, will offer disposal fees that are competitive, and will provide communities with long-term cost certainty for disposing of their waste. Considering traffic congestion in Davis, Salt Lake, and Utah Counties, Promontory Point Landfill is a more cost-effective option for northern Utah communities than other Utah disposal sites.

Many municipal waste districts along the Wasatch Front with landfills are facing end-of-landfill-life issues; many large municipal waste-disposal operations are consolidating, and these landfills could have as little as 21 to 29 years of life remaining. After municipal landfills close, the two commercial Utah landfills will have some capacity; however, Promontory Point Landfill will help ensure that these companies do not form a duopoly, which could drive disposal prices higher.

The Box Elder County Economic Development Director, Mitch Zundel, commissioned a study from the Gardner Policy Institute regarding the economic and fiscal impacts associated with Promontory's new solid waste facility. Their model estimated the new workers and total population attracted by the total (direct, indirect, and induced) economic activity produced by Promontory Point Landfill to be a 15-year average of 185 new jobs in Box Elder County and 375 total new jobs in the state. Promontory Point Landfill, therefore, is aligned with Governor Gary Herbert's rural jobs initiative, which aims to strengthen local rural economies, create jobs, and support local business.

For Box Elder County, the *net* revenues (income, sales, and property tax, less expenditures) were modeled to be up to $2.3 million annually, with a net present value of $31.0 million. New state net revenues were modeled to average $0.92 million each year with a net present value of $12.5 million. The total new direct tax revenue from Promontory Point Landfill to Box Elder County is projected to increase from $0.91 million initially and grow to $2.2 million annually in 15 years.

Modern landfilling is an environmentally sound waste management practice. Promontory's leadership and operations support staff have well over 100 years of solid waste management experience. In their previous work experience, they have not received notice of any major violations. For minor infractions, all regulatory issues were addressed to the satisfaction of the appropriate agency. Promontory believes in appropriate resource utilization, recycling, and reuse to preserve our natural resources. Promontory is willing to partner with municipalities and facilitate discussions about the feasibility of diverting and recovering organics, recyclables, and other inert and reusable materials at the landfill.

Promontory is committed to protecting and enhancing the environment. Promontory Point Landfill meets all siting restrictions and engineering design standards found in Utah Solid Waste Rules. The environmental impacts will not be materially different than they are under the active Class I landfill permit. The minor land-use impacts are offset by powering the site with renewable energy, by installing a landfill gas collection system and using the gas as a transportation fuel offsetting the use of dirtier diesel fuel, by implementing a dust-control plan, and by facilitating transportation efficiency, which can

decrease air pollutant emissions. Implementing Promontory Point Landfill's Class V permit now will help eliminate the need for new landfills and their potential land-use conflicts. Additional considerations could include natural resource enhancements in the landfill's buffer or non-operational areas.

Promontory Serves Industry

Waste management is an integral part of industry in Utah. Box Elder County sees an opportunity to attract industrial and manufacturing businesses by developing low-cost and long-term disposal infrastructure for waste generated by these businesses. For Box Elder County, Promontory Point Landfill is an economic driver and will support future economic development in accordance with Governor Gary Herbert's rural jobs initiative. The Gardner Policy Institute projects that a 188.7% increase in the administrative and waste services sector is needed to manage future waste generated by Utah's fast-growing population. Promontory Point Landfill would be developed ahead of the anticipated population growth and the critical need for additional disposal capacity. Promontory Point Landfill expands the waste-disposal choices for Utah's communities and businesses.

Conclusions

In conclusion, annual waste volumes will grow substantially as Utah's population continues to expand. The need for a Class V designation for Promontory Point Landfill is based on the market and economic assessment, which shows strong needs and benefits for a regional facility. Box Elder County wants to offer industry lower disposal costs that are provided by the economies of scale offered by larger landfill operations, similar to other municipalities in other parts of the state. Promontory Point Landfill's Class V designation is supported by Box Elder County, which sees substantial economic and fiscal benefits. Because of the lack of environmental effects and limited land-use conflicts, Box Elder County has changed its zoning to allow the use of the land for a Class V landfill and has issued private activity bonds for construction.

Promontory Point Landfill is a critical and integral component of industry in Utah, which needs to increase employment in its waste services sector by 188.7% by 2065 to keep up with the disposal demand. All local and legislative approvals are in place, and the information presented in this report demonstrates compliance with and provides evidence for the fulfilment of the requirements of Utah Code Title 19, Chapter 6, Part 1, Section 108, § 10 and § 11 of the Utah Solid and Hazardous Waste Act for Promontory Point Landfill. With DWMRC's approval of Promontory Point Landfill's operating plan and Class V Landfill Permit Application, and Governor Gary Herbert's approval, Box Elder County and the existing and future industries in the state can start to recognize the benefits of Promontory Point Landfill.

1 Introduction

Promontory Point Landfill is a permitted Class I landfill. Promontory Point Landfill is seeking a Class V landfill permit, which would allow it to operate as a commercial nonhazardous solid waste disposal facility, as defined by Utah Administrative Code Rule R315-301-2(11) and Utah Statute Title 19, Chapter 6, Section 102(3)(a). This document contains all of the information required by Utah Code Title 19, Chapter 6, Part 1, Section 108, § 10 and § 11 of the Utah Solid and Hazardous Waste Act for evaluating a Class V landfill.

Like Class I landfills, Class V landfills are permitted to receive for disposal:

- municipal solid waste;
- any other nonhazardous solid waste, not otherwise limited by rule or solid waste permit, including construction and demolition waste (concrete, bricks, rocks, and wood), yard waste, and other inert wastes;
- in conjunction with municipal solid waste or other nonhazardous solid waste, waste from a conditionally exempt small quantity generator of hazardous waste;
- industrial waste is any solid waste generated at a manufacturing or other industrial facility that is not a hazardous waste or that is waste from a conditionally exempt small quantity generator of hazardous waste; and
- special waste, which is nonhazardous solid waste but that requires special handling or is asbestos, ash, bulky waste (automobile bodies, furniture, appliances, waste tires), dead animals, waste containing polychlorinated biphenyls (PCBs), petroleum contaminated soils, waste asphalt, and sludge.

As part of the requirements of the Class V Permit Application, Promontory submitted a *Needs Assessment Report* in compliance with Utah Code, Title 19, Chapter 6, Part 1, Section 108, § 10 and § 11. The *Needs Assessment Report*[1] was originally included as Appendix L-1 of the Promontory Point Landfill Class V Permit Application and is discussed in more detail in Section 1.1 (Purpose of This Report Addendum).

This report addendum presents an overview of waste generation in Utah, the economic and fiscal benefits of Promontory Point Landfill having a Class V designation, and the necessity of additional long-term waste-disposal capacity to serve the growing population and industry in Utah.

1.1 Purpose of This Report Addendum

As part of the Class V Landfill Permit Application process, Promontory Point Resources, LLC (Promontory), is submitting information to the Director of the Utah Division of Waste Management and Radiation Control (DWMRC) regarding the economic market analysis and need justification for a new commercial landfill in Utah. This information is required pursuant to Utah Code Title 19, Chapter 6, Part 1, Section 108, § 10 and § 11 of the Utah Solid and Hazardous Waste Act. The information in this report supplements

[1] *Class V Needs Assessment Report*, WIH Resources, March 2017

Promontory's Class V Permit Application (March 2017) Appendix L-1 titled *Class V Needs Assessment Report*.

Promontory's *Needs Assessment Report* in the Permit Application was reviewed by DWMRC and its consultant, SC&A. SC&A reviewed the report and supplied the DWMRC with its review findings in an *Evaluation Report* in July 2017.[2] Promontory's responses to each of findings in the *Evaluation Report* are provided in Appendix E of this report addendum. Promontory met with DWMRC's Director, staff, and SC&A on August 10, 2017, to review the *Evaluation Report* findings, discuss the main benefits of Promontory Point Landfill, and get clarification regarding the factors most important for DWMRC's review.

Promontory has prepared new information based on the aforementioned meeting. Some of the information provided in the *Needs Assessment Report* is superseded by information in this *Needs Assessment Report Addendum*. This report addendum discusses in greater detail the need for the Class V designation for Promontory Point Landfill, which would allow the landfill to receive public or privately contracted nonhazardous solid waste from other sources in addition to, but of the same type as, the waste it can already receive under the currently active Class I landfill permit.

1.2 Contents of This Report Addendum

The remainder of this *Needs Assessment Report Addendum* describes Promontory Point Landfill, presents the developmental history of the landfill, summarizes the economic benefits of the landfill to Box Elder County, provides an overview of the waste market that could use the landfill, presents the need for additional landfill capacity, and presents the public benefits that the landfill provides as a commercial facility. The main report addendum sections are as follows:

- Section 2 describes the partnership that Promontory has developed with Box Elder County and the economic and fiscal benefits that the landfill provides to the county and the state.
- Section 3 presents an overview of Utah's demographics and expected future population as well as the resulting waste generation. Section 3 also presents information regarding Utah's industrial waste and, because Promontory Point Landfill will be rail-served, the regional nonhazardous wastes that could be disposed at the facility.
- Section 4 provides the core needs assessment information pursuant to Utah Code § 19-6-108 (9) and (10). Section 4 includes all information for the market analysis and need for additional capacity. It is organized by Utah Code section and contains the information needed for the Director to approve the operating plan.
- Section 5 provides the additional determinations required by Utah Code § 19-6-108 (11), which is the potential beneficial and adverse environmental effects of the landfill and the need to serve industry within the state.

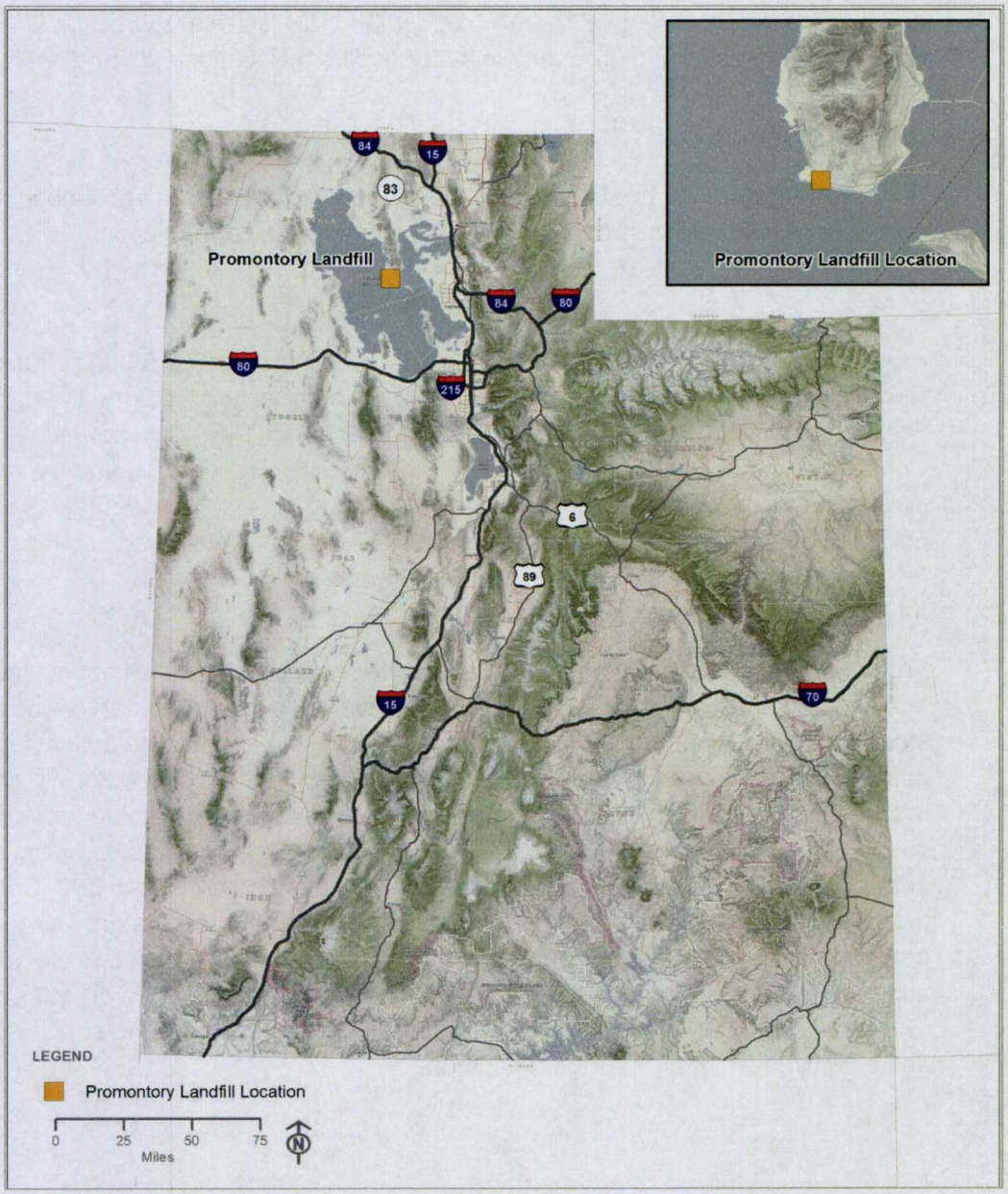
[2] *Evaluation of the Promontory Point Resources, LLC, Needs Assessment Report*, SC&A, July 10, 2017

2 Promontory Point Landfill

2.1 Location

Promontory Point Landfill is located on the west side of the southern tip of the Promontory Point Peninsula at 18900 West along East Promontory Road in Promontory, Utah (Figure 1). A ridgeline along the Promontory Peninsula serves as a visual shield from the Wasatch Front. The site is in Township 6 North, Range 5 West, Section 19, Salt Lake Meridian, Box Elder County. Of the 1,981-acre site, about half (981 acres) is permitted for disposal. The other 1,000 acres serve as buffer area around the planned disposal footprint. An additional 137 acres south of Promontory Road will be used for rail operations and access.

Figure 1. Location Map



2.2 Permits and Approvals

Promontory Point Landfill meets all siting and engineering requirements and has had a Class I permit since September 2011. Permit Modification #1 was a minor modification due to the change in ownership and was issued in 2015. Permit Modification #2 was a major modification due to changes in the landfill design and financial assurance requirements. The active permit was issued by DWMRC on March 15, 2017.

Citing favorable economic impacts and pursuant to Utah Code Title 19, Chapter 6, Section 108, § 3, the Utah legislature approved Promontory Point Landfill with House Joint Resolution 20 in the 2016 legislative session. Refer to Section 2.4.2 (Economic Benefits) for detailed information regarding the economic and fiscal benefits of Promontory Point Landfill.

The Box Elder County Commission approved Ordinance 422 on July 6, 2016, amending the county's zoning map to allow the Class V landfill. Also refer to Section 2.4.1 (Box Elder County Support) for information about additional local permits and approvals.

2.3 Facility Description

The following sections briefly describe the site, confirming details provided in the Permit Applications and demonstrating compliance with applicable regulations.

2.3.1 Site Suitability

Promontory Point Landfill meets all the location standards in R315-302 for Class I and Class V landfills. A detailed description is provided in Section I.c of the Class V Landfill Permit Application (March 2017). Also refer to Section 5.1 (Environmental Considerations) for a concise summary of the landfill's siting criteria and the technical and engineering performance standards designed to protect human health and the environment.

2.3.2 Standards for Performance, Design, and Operations

Promontory Point Landfill has been designed to meet or exceeds all of the standards for maintenance and operation in R315-303 for Class I and Class V landfills. These standards include performing gas monitoring and taking appropriate action if explosive gases are detected. A fugitive dust plan was included in the Class V Permit, and this plan is part of the operations to address ambient air quality standards at the property boundary. A groundwater monitoring system is being designed, and sampling and analysis plan has been developed, to meet the requirements of R315-308. Corrective action plans are also in place if the surface water run-on/run-off system fails or if groundwater contamination is detected. Regular inspections of the leachate collection and recovery system groundwater monitoring network and of the landfill gas collection system will be a part of the ongoing operations in order to assess the structural integrity and effectiveness of all installed equipment.

2.3.3 Capacity

The 1,981-acre site has about 981 acres permitted for disposal. The landfill airspace capacity has been estimated based on the proposed base grading plan, the proposed final grading plan, and the proposed liner system and final cover system designs, as presented in the Class V Landfill Permit Application, Appendix Y (Phase 1 Plans). This layout resulted in an estimated capacity of about 775 million cubic yards or equivalent to an estimated capacity of 656 million tons of waste.

Promontory provided projected municipal solid waste, industrial waste, and special waste tonnage in the Class V Landfill Permit Application. Assuming that the site initially receives 200,000 tons per year, or 750 tons per day, and that disposal rates increase by an average of 2% per year, the landfill has a projected lifespan of approximately 125 years.[3]

2.4 Development History

2.4.1 Box Elder County Support

Promontory's partnership with Box Elder County has developed over several years. Box Elder County was presented information regarding the potential benefits of permitting a regional facility. The following is a summary of Box Elder County's actions approving the development of Promontory Point Landfill.

- A public hearing was held by the Box Elder Planning Commission on June 16, 2016, to solicit comments on Ordinance 422, which amended the county's zoning map to allow the Class V landfill. The Box Elder County Commission approved Ordinance 422 on July 6, 2016.
- On September 7, 2016, the County Commission unanimously adopted Resolution 16-08 approving Box Elder County's assistance with Promontory's application to the Utah Private Activity Bond Review Board (which is under the Governor's Office of Economic Development) for a private activity revenue bond.
- On October 5, 2016, the Box Elder County Commission heard more details about the bond issue. The meeting also included a request for public comments and questions. Regarding the security of the revenue, Promontory explained the rigorous feasibility evaluations done by its equity investors and the bond purchasers.
- At the October 5, 2016, Commission meeting, the Commission was also presented with the results of an analysis of the County's municipal services. The analysis showed that there is a $1.6 million funding gap for these services.[4] This is germane to the operation of Promontory Point Landfill because, in addition to state payroll and corporate taxes, the landfill will generate local taxes of almost $1 million initially, which will grow to over $2 million in 2031.[5] For more information, refer to Section 2.4.2 (Economic Benefits).

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[3] *Application for a Permit to Operate a Class V Landfill*, Appendix U, Terta Tech BAS, March 2017

[4] *Municipal Service Tax Feasibility Study*; presentation by Lewis, Young, Robertson, & Burningham, Inc.; October 2016

[5] *Economic and fiscal impacts associated with Promontory Point Resources' new solid waste facility, 2017–2031*, Kem C. Gardner Policy Institute, University of Utah, November 18, 2016

- On December 7, 2016, the Utah Private Activity Bond Review Board gave its approval for Box Elder County to issue the private activity bond.
- On March 15, 2017, the Box Elder County Commission reviewed and approved, as a condition of its conditional-use permit, Promontory's mitigation agreement. This mitigation agreement provided the County with details regarding its contingency plans for fire, groundwater contamination, surface water runoff, landfill gas controls, fugitive dust, litter control, procedures for rejecting hazardous waste, and other related components of the landfill operating plan.

Through this coordination, Box Elder County recognized the need to develop a long-term waste-disposal infrastructure in order to help attract new business, including heavy industrial and manufacturing businesses, to the area by providing environmentally responsible disposal options for its discarded material. Because Little Mountain Landfill has no composite liner, no leachate collection system, and no groundwater-monitoring system, it is not applicable for most industrial wastes where liability indemnification is important to those businesses. In Promontory leadership's experience, for owners of large industrial plants, liability and indemnification are major concerns when making waste management and disposal decisions about their waste. Municipal or publicly owned facilities often provide little protection from a liability and indemnification standpoint, since a lot of heavy-industrial companies are often significantly larger, financially, than the communities where they reside. In theory, a municipality could offer liability protection and indemnification. In practice, if there were ever environmental issues at a publicly owned landfill and a major industrial company was known to have industrial waste in that facility, responsibility for any mitigation or cleanup could fall on the industrial company.

As evidence that Box Elder County's landfill is not suitable, only 170 tons of industrial waste was shipped to Little Mountain Landfill in 2015. As a result of landfill conditions and the lack of indemnification, some of the largest industries have constructed their own on-site landfills. There are 3 Class IIIb landfills in Box Elder County, Nucor and ATK are examples, and 25 in the state. Given the conditions at Little Mountain Landfill, any future industrial companies might be hesitant to contract with Box Elder County and, therefore, would have to build their own landfill. A $15 million or more capital investment is needed to develop a large landfill that meets modern engineering design standards. It is often not financially feasible or politically possible for smaller public entities to invest this amount of capital. If it does, the investment could result in high operating costs ($/ton) if waste from only within the municipality's boundary (Class I) is delivered. Promontory Point Landfill would give such businesses in all northern Utah counties an economical and environmentally responsible alternative.

To make this new landfill in Box Elder County as financially attractive as possible for attracting new business, the County wants a regional facility and wants to accept waste from outside the county. A Class V landfill will provide citizens and businesses, now and in the future, with the benefit of low disposal rates due to the economy of scale offered by a larger operation.

2.4.2 Economic Benefits

Background

The Box Elder County Economic Development Director, Mitch Zundel, commissioned a study from the University of Utah's Kem C. Gardner Policy Institute regarding the economic and fiscal impacts associated with Promontory's new solid waste facility.[6] The Gardner Policy Institute used Promontory's estimated waste volumes received in the first 3 years of operation under the Class V permit, and then increased these volumes by 2% per year to the end of the 15-year analysis period. Promontory provided estimates of required employment levels, capital expenditures for the construction of the initial landfill facilities and periodic liner expansion, and operating expenditures. The Gardner Policy Institute analyzed the effects of the construction and operation of a new solid waste facility for Box Elder County. The results are based on annual employment; compensation; capital, operations, and maintenance expenditures; state income taxes; property taxes; and other local tax data.

The Gardner Policy Institute used its REMI PI+ economic model to forecast the economic effects of Promontory's new solid-waste facility in Box Elder County. In its analysis, the jobs and compensation provided to Promontory employees, plus the capital, operations, and maintenance expenditures, are *direct effects*. The economic activities associated with required purchases from local suppliers, who in turn make purchases from other local suppliers, are *indirect employment and income effects*. In addition, the Gardner Policy Institute modeled the spending of direct and indirect employees with their new wages in the local economy creating "induced employment" economic benefits.

Results

The Gardner Policy Institute's model also estimated the new workers and total population attracted by the total (direct, indirect, and induced) economic activity produced by Promontory's new landfill. **The model showed that a 15-year average of 185 new jobs in Box Elder County and 375 total new jobs in the state would result** (based on the total waste volumes and the timing of the deliveries). In terms of total population (including school- and college-age people), Promontory Point Landfill is predicted to support up to 657 people by 2031. Promontory Point Landfill, therefore, is aligned with Governor Gary Herbert's rural jobs initiative,[7] which aims to strengthen local rural economies, create jobs, and support local business. Refer to Appendix A for the Gardner Policy Institute's complete analysis.

With respect to the fiscal impacts (government revenues), Promontory Point Landfill is important to Box Elder County. The increased economic activity produces new income, sales tax revenues, and property tax revenues, while the growing population creates the need for additional government expenditures. The Gardner Policy Institute estimated fiscal impacts based on multi-year historical relationships between personal income and industry output and tax revenues, and accounts for additional expenditures per capita for the relevant populations (school age, college age, and total population). **For Box Elder County, the *net* revenues were modeled to be as much as $2.3 million annually,**

[6] Refer to footnote 5 on page 5.

[7] http://25kjobs.com

with a net present value of about $31.0 million. New state net revenues were modeled to average $0.92 million each year, with a net present value of $12.5 million.

As mentioned in Section 2.4.1 (Box Elder County Support), the County is facing a $1.6-million-dollar funding gap in its Municipal Services Fund. The total budget in 2016 was $8.1 million with total expenditures of $9.7 million. **The total new direct tax revenue from Promontory Point Landfill to Box Elder County is projected to increase from $0.91 million initially and grow to as much as $2.2 million in 15 years.** This represents 11.2% of the Municipal Service Fund budget (9.4% of expenditures) initially based on the actual amount of waste received, growing to 27.2% (22.7% of expenditure) in 2031 (assuming that the budget is not increased and waste assumptions are met). Consequently, **Promontory Point Landfill offers Box Elder County the potential opportunity to avoid tax increases that would be needed to close the funding gap.**

3 Demographics and Waste Generation Forecasts

3.1 Population Forecasts

Utah's population is projected to increase from about 3 million people in 2015 to about 5.8 million people in 2065; this is an increase of 2.8 million people, or about 93%. This total growth equates to an annual growth rate of about 1.3%. All counties in Utah are expected to grow in population over the next 50 years. Population growth will be most pronounced along the Wasatch Front (Weber, Davis, Salt Lake, and Utah Counties). Salt Lake County is projected to remain the most populous county. However, Utah County's population is expected to increase by 177% from 2015 to 2065 and be close to the population of Salt Lake County. Washington County, in the extreme southwestern part of Utah, is projected to grow rapidly and become the fourth-most-populous county with 509,000 people, surpassing Weber County (389,334) by 2065.[8] Refer to Section 3.1.1 below for detailed projections.

3.1.1 Northern Utah Communities

Although all counties in Utah are projected to experience population growth over the next 50 years, the most growth (in total number of people) will take place in Salt Lake and Utah Counties. Table 1 shows population projections in the northern Utah counties in 2015, 2050, 2060, and 2065.

[8] *Utah's Long-Term Demographic and Economic Projections*, Kem C. Gardner Policy Institute, University of Utah, July 1, 2017

Table 1. Population Forecasts

County	2015	2050	2060	2065	Average Growth Rate (2015–2065)
Salt Lake	1,094,650	1,531,282	1,648,280	1,693,513	0.88%
Utah	585,694	1,297,515	1,504,433	1,620,246	2.10%
Davis	336,091	493,263	527,545	544,958	0.78%
Weber	242,737	356,812	379,350	389,334	0.95%
Cache	121,855	204,114	223,154	234,744	1.29%
Box Elder	52,971	77,472	83,248	86,218	0.98%
Morgan	11,080	21,978	23,583	24,065	1.62%
Total	**2,445,078**	**3,982,436**	**4,389,593**	**4,593,078**	—

Source: *Utah's Long-Term Demographic and Economic Projections*, Kem C. Gardner Policy Institute, University of Utah, July 1, 2017

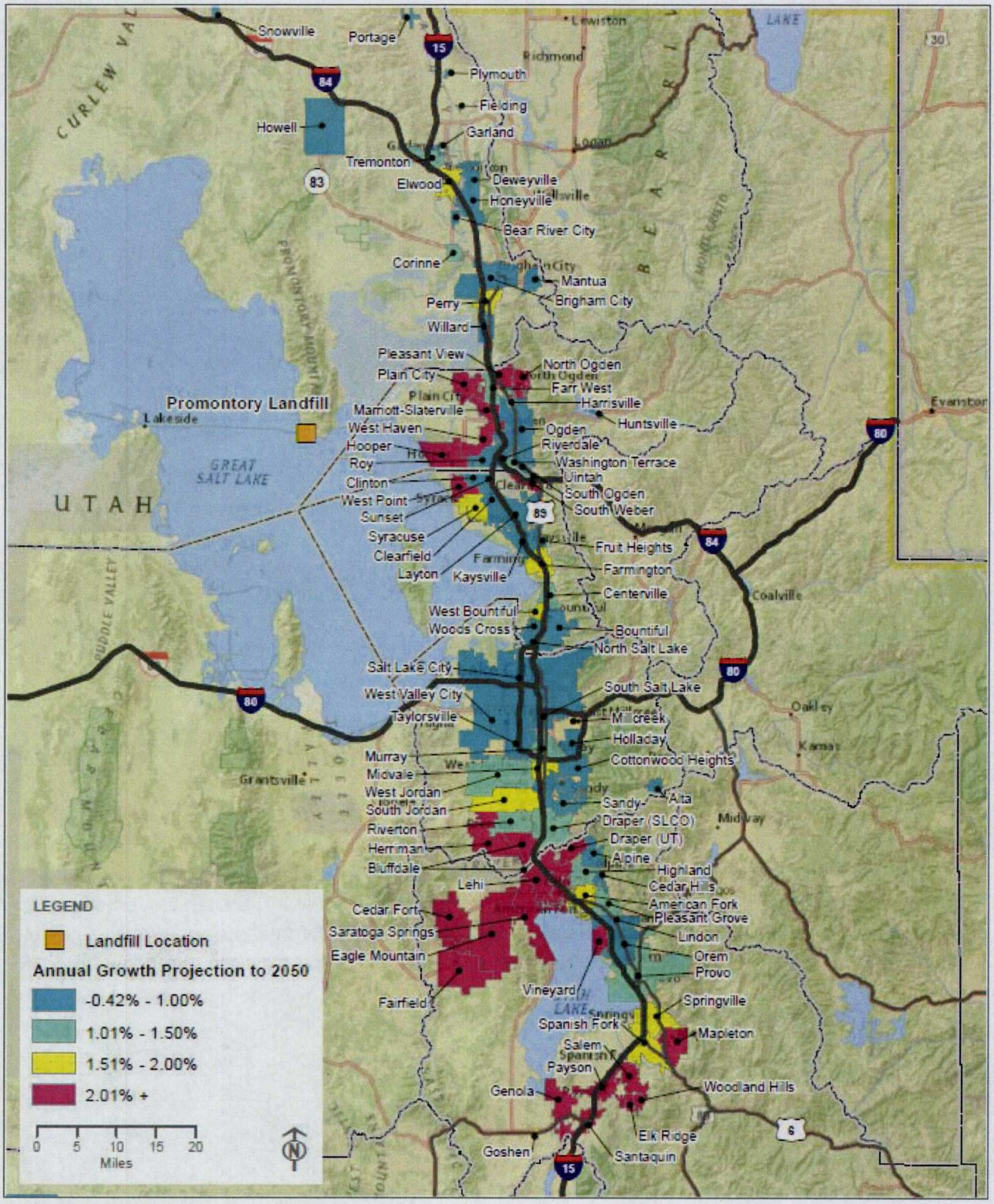
These northern Utah counties are projected to have 79% of the state's total population (5.8 million) by 2065. The "ring counties" (Morgan, Summit, Rich, and Uinta) around the Wasatch Front are also expected to grow rapidly from an overall percentage standpoint. However, total waste volumes in future years will be dominated by the larger counties listed in Table 1 above. The wastes from these ring counties could use Promontory Point Landfill once these counties' landfills reach capacity. However, the waste from larger counties forms the basis for landfill capacity estimates for the locally generated waste and the need information in this report addendum.

3.1.2 Waste Growth

Another factor in estimating landfill capacity is the assumed rate of waste growth within a specific landfills wasteshed (areas that brings their waste). As is normal, some areas develop faster, on a percentage basis, than others due to a variety of factors including availability of developable land and proximity to employment. The Utah Governor's Office of Management and Budget subdivides county population forecasts and growth rates by municipality.[9] Figure 2 shows the forecasted average annual growth rate between 2012 and 2050 for various cities along the Wasatch Front.

[9] 2012 baseline projections, Governor's Office of Management and Budget, https://gomb.utah.gov/budget-policy/demographic-economic-analysis/

Figure 2. Annual City Growth Projections to 2050



As shown above in Figure 2, cities in the following areas are projected to grow at a faster rate (1.5% to 2%) than the rest of the Wasatch Front (1% to 1.5%):

- Southern part of Salt Lake County (South Jordan, Herriman, and Bluffdale)
- Northern part of Utah County (Lehi, Saratoga Springs, and Eagle Mountain)
- Southern part of Utah County (Springville, Spanish Fork, Mapleton, and Payson)
- Northern Davis County (Syracuse and West Point)
- Western and Northern Weber County (Hooper and West Haven)

Shorter-range forecasts made by the Mountainland Association of Governments estimated growth rates of 3.1% for southern Utah County to 2030 and 2.3% for all Utah County cities to 2040.[10] This city-level resolution is an important factor when calculating waste growth and the remaining capacity of various landfills and in projecting the need for future landfill airspace. To be conservative, Section 4 (Needs Assessment) and the calculations in Appendix C provide capacity information for various existing landfills based on an assumed 2% rate of waste growth.

3.2 Waste Market

3.2.1 Utah Municipal and Commercial Waste

Municipal solid waste (MSW) is defined as "household waste, nonhazardous commercial solid waste, and non-hazardous sludge." Commercial solid waste is defined as "all types of solid waste generated by stores, offices, restaurants, warehouses, and other nonmanufacturing activities, excluding household waste and industrial wastes" (R315-301). Together, these wastes are categorized as municipal waste, since commercial waste is not reported or tracked separately by DWMRC.

Construction and demolition waste, or C&D waste, is "solid waste from building materials, packaging, and rubble resulting from construction, remodeling, repair, abatement, rehabilitation, renovation, and demolition operations on pavements, houses, commercial buildings, and other structures." Examples of C&D waste provided in Utah solid waste rules and include concrete, bricks, other masonry materials, soil, rock, waste asphalt, rebar contained in concrete, untreated wood, and tree stumps.

Table 2 and Table 3 provide estimates of future waste generation. The annual municipal waste generation in Table 2 was estimated based on a per-capita generation rate of 4.44 pounds per person per day from the U.S. Environmental Protection Agency (USEPA).[11] This generation rate was applied to the population forecasts from Table 1 above to estimate the future amount of waste generated in each county. Annual waste growth therefore follows estimates of the rate of population growth.

[10] Mountainland Association of Governments, 2005, from *Solid Waste Planning Technical Report*, URS, June 2007

[11] *Municipal Solid Waste Generation, Recycling and Disposal in the US*, U.S. Environmental Protection Agency, 2012

Table 2. Estimated Annual Municipal Solid Waste Generation at 4.44 Pounds per Person per Day

In tons per year

County	2015	2050	2060	2065
Salt Lake	886,995	1,240,798	1,335,601	1,372,254
Utah	474,588	1,051,376	1,219,042	1,312,885
Davis	272,335	399,691	427,470	441,579
Weber	196,690	289,125	307,387	315,477
Cache	98,739	165,394	180,822	190,213
Box Elder	42,922	62,776	67,456	69,862
Morgan	8,978	17,809	19,109	19,500
Total	**1,981,247**	**3,226,968**	**3,556,887**	**3,721,771**

As shown in Table 2 above, *annual* waste volumes would be 88% higher by 2065, or nearly double the 2015 volumes. Promontory Point Landfill provides 105 years of capacity for these seven counties assuming 2050 waste volumes (3,226,968 tons annually) or a total capacity of 340,000,000 tons.

The values in Table 2 above reflect a waste-generation assumption of 4.44 pounds per person per day. However, Utah's per-capita waste generation is much higher if all waste types are included. For example, using reported disposal volumes by Salt Lake County waste management entities in 2015 (including MSW and C&D waste), Promontory calculated a per-capita generation rate of 6.82 pounds per person per day.[12] Similarly, taking Utah County's total land-disposal tonnages and its population in 2015, this equates to a generation rate of 6.98 pounds per person per day.[13] This per-capita rate is similar to that recently published in California, which has a much higher diversion recycling rate, and which calculated a land disposal rate of 6.0 pounds per person per day in 2016.[14]

Table 3 below provides the total waste quantities based on population forecasts and a waste generation assumption of 6.0 pounds per person per day. Using this rate, Promontory calculates a total seven-county waste generation of over 5 million tons annually by 2065.

[12] 2015 population of 1,094,650 and 1,363,135 tons municipal and C&D waste in Salt Lake County. Refer to Appendix C.

[13] 2015 population of 585,694 and 746,092 tons of municipal and C&D waste in Utah County. Refer to Appendix C.

[14] *State of Disposal and Recycling in California 2017 Update*, CalRecycle, August 2017

Table 3. Estimated Annual Municipal Solid Waste Generation at 6.0 Pounds per Person per Day

In tons per year

County	2015	2050	2060	2065
Salt Lake	1,198,642	1,676,754	1,804,867	1,854,397
Utah	641,335	1,420,779	1,647,354	1,774,169
Davis	368,020	540,123	577,662	596,729
Weber	265,797	390,709	415,388	426,321
Cache	133,431	223,505	244,354	257,045
Box Elder	58,003	84,832	91,157	94,409
Morgan	12,133	24,066	25,823	26,351
Total	**2,677,360**	**4,360,767**	**4,806,604**	**5,029,420**

Some of this waste is C&D waste, which is about 30% of Utah and Salt Lake Counties' total waste. While not specifically analyzed in this report addendum, future C&D waste will also need land disposal. The capacity of existing C&D landfills and future landfill capacity needed was not quantified by Promontory. However, these volumes are not insignificant, and Promontory expects them to be substantial based on the expected growth shown in Table 5 below. C&D waste disposal will require new land areas, and such development would displace other land uses. Promontory Point Landfill's size would provide C&D waste disposal with less land-use conflicts.

3.2.2 Industrial Waste

Industrial solid waste is "any solid waste generated at a manufacturing or other industrial facility that is not a hazardous waste or that is a hazardous waste from a conditionally exempt small quantity generator of hazardous waste." Industrial solid waste includes waste from electric power generation; fertilizer or agricultural chemical industries; food and related products or byproducts industries; inorganic chemical industries; iron and steel manufacturing; leather and leather product industries; nonferrous metals manufacturing or foundry industries; organic chemical industries; plastics and resins manufacturing; the pulp and paper industry; rubber and miscellaneous plastic product industries; stone, glass, clay, and concrete product industries; textile manufacturing; transportation equipment manufacturing; and water treatment industries. Industrial solid waste does not include mining waste, oil and gas waste, or other waste excluded by Subsection 19-6-102(18)(b) of Solid and Hazardous Waste Act.

In 2015, DWMRC reported the disposal of more than 1.2 million tons[15] of industrial waste in Utah's landfills and incinerators. Most of this waste was landfilled in large Class V landfills or Class III landfills, meaning that the waste was managed on the same site as the industrial facility (examples are Western Metals, Nucor, ATK Launch Systems, Intermountain Power, and PacifiCorp). Excluding the Intermountain Power Agency's

[15] 2015 waste volumes from a DWMRC tracking spreadsheet provided by Alan Moore in 2016

large Class IIIb ash landfill (522,000 tons in 2015), about 704,000 tons of industrial waste were disposed in Utah in 2015. Because the Class V landfills do not report the source of this waste, it is unclear exactly how much of this industrial waste is generated in Utah and how much is imported from other states.

To estimate future trends in industrial waste generation, Promontory evaluated future employment forecasts. In Utah as a whole, employment is expected to increase from 1,863,692 jobs in 2015 to 3,658,710 jobs by 2065, nearly double the 2015 level. Table 4 summarizes the projected employment values for northern Utah counties, which are about 84% of all jobs in Utah.

Table 4. Projected Employment by County

County	2015	2055	2065	Percent Change 2015 to 2065
Salt Lake	844,316	1,385,240	1,454,567	72%
Utah	311,650	753,266	887,896	185%
Davis	172,614	302,616	328,512	90%
Weber	131,651	197,804	201,696	53%
Cache	73,119	124,227	134,247	84%
Box Elder	26,715	42,470	45,989	72%
Morgan	4,456	8,141	9,079	104%
Total	**1,564,521**	**2,813,764**	**3,061,986**	**96%**

Not all industries will generate significant amounts of waste. In fact, the majority of waste from commercial businesses is included in the values presented in Section 3.2.1 (Utah Municipal and Commercial Waste). However, a number of the new or expanding businesses *will* generate industrial waste. Refer to Section 2.4.1 (Box Elder County Support) for the unique liability and indemnification considerations for this waste type.

In addition to population forecasts, the Kem C. Gardner Policy Institute projected employment by industry types to 2065.[16] Table 5 presents the expected growth for various industries and their rank with respect to the total percentage change between 2015 and 2065. In order to provide a view to the future and for ease of reference, Table 5 does not include all industries. Table 5 does include some of the larger industries, the top-ranked industries in terms of growth, those that will contribute significant amounts of waste (bold text), and the industry (administrative and waste services) that is needed to manage this future waste.

[16] Refer to footnote 8 on page 8.

Table 5. Employment by Industry and Growth

Industry	2015	2065	Percent Change 2015–2065	Rank
Construction	**139,236**	**394,184**	**365.5%**	**1**
Professional and technical services	88,018	204,007	231.8%	2
Administrative and waste services	**85,999**	**248,263**	**188.7%**	**3**
Health	140,163	289,890	106.8%	6
State and local government	198,676	358,892	80.6%	9
Retail	157,969	220,018	39.3%	14
Accommodation and food	112,549	154,388	37.2%	15
Manufacturing	**123,742**	**156,397**	**26.4%**	**16**

As you can see from Table 5, construction (+365.5%) and administrative and waste services (+188.7%) are projected to be two of the top three growing industries. And although Utah's economy is shifting to be more service-focused, the amount of waste from manufacturing and other industrial industries is expected to grow substantially in the future.

Box Elder County is attractive to industrial and manufacturing businesses because of its inexpensive land values, the demographics of its work force, and its proximity to existing transportation infrastructure. Promontory Point Landfill provides the long-term industrial waste-disposal infrastructure that is an integral part of industry in Utah. Promontory Point Landfill will also help attract heavy industries to Box Elder County and other northern Utah communities, which is desired by local economic development officials.

The investment in rail infrastructure, which would occur before the significant waste growth and new disposal demand, expands hauling options for communities facing end-of-landfill-life issues and that are transitioning to hauling waste out of their district. Also see Section 4.1.1 (Waste Source) for a summary of the market or "wasteshed" that could use Promontory Point Landfill.

3.2.3 Special Waste (Nonhazardous Waste)

Special waste is nonhazardous solid waste that requires special handling or is asbestos, ash, bulky waste (automobile bodies, furniture, appliances, waste tires), dead animals, waste containing PCBs, petroleum-contaminated soils, waste asphalt, or sludge.

Box Elder County has changed its zoning to allow a regional Class V landfill land use. As described throughout this report addendum, Box Elder County needs additional sources of revenue, and it seeks the development of industrial and manufacturing businesses and the associated jobs they bring to sustain their communities in the long term. Box Elder County also wants to benefit from the economy of scale provided by a regional waste system. By taking nonhazardous special waste from outside Box Elder County, Promontory Point Landfill will be better able to keep disposal costs ($/ton) low due to

improved economies of scale, and disposal costs can be driven even lower as waste volumes to the landfill increase.

3.2.4 Regional Waste Market

Promontory intends for Promontory Point Landfill to serve the expanding regional need for waste-disposal services. With a Class V designation, Promontory Point Landfill would become rail-served, and rail service would significantly expand the landfill's potential wasteshed. Promontory Point Landfill is adjacent to Union Pacific Railroad's (UP) main track. Most heavy-industrial manufacturing facilities are rail-served, so Promontory Point Landfill would provide a cost-effective alternative for transporting waste long distances. Figure 3 shows the reach of potential industrial and special-waste customers. Promontory has preliminary approval from UP to build a rail spur.

Promontory Point Landfill offers a more economically favorable disposal option for materials that are nonhazardous but more heavily regulated in other western states. For example, California has imparted more-stringent disposal regulations on a number of non-RCRA (Resource Conservation and Recovery Act) wastes. Given that there are many industrial facilities in California, Promontory Point Landfill is strategically located to provide disposal solutions to these industries because of the proximity of UP's main line.

Both RCRA and non-RCRA wastes in California are subject to additional fees at the time of disposal. The fees vary according to material type. The approved disposal sites in California charge the fees according to material type and are responsible for passing the fees to the State Board of Equalization, which collects fees for the California Department of Toxic Substances Control. Wastes disposed out of state have no additional fees.

The additional regulations, fees, and limited disposal capacity in California result in tipping fees that are $60 to $80 per ton. Add the system costs associated with over-the-road transportation, and rail service and out-of-state disposal becomes more economical in comparison for a large percentage of manufacturing facilities in California and elsewhere.

Figure 3. Union Pacific Railroad Lines

Regional Industrial Waste

According to the most recent USEPA *Biennial Report*,[17] large-quantity generators in the western United States generated more than 647,000 tons of RCRA hazardous waste. In the experience of Promontory's leaders, these types of facilities produce 1 to 2 times the special and industrial waste volumes of their hazardous waste generation. This generation rate places the special and industrial waste volumes at about 1,200,000 tons per year from large process industries within the potential rail-served wasteshed.

Regional Special Waste

Low-level contaminated soil is another potential special waste source for Promontory Point Landfill. It is difficult to specify the exact volume (potential annual total tonnage) of contaminated soil that could be delivered to Promontory Point Landfill. The same market forces of transportation and disposal costs will determine the most economical disposal location for this waste. Promontory has confirmed interest from remediation contractors, which are confidential. However, the interest gave Promontory's investors confidence in the landfill's market opportunity and has allowed funding to be obtained for the next phase of development.

As an illustration of the potential for receiving low-level contaminated soil, USEPA estimates that, on an acreage basis, 74% of Brownfield sites, 62% of Superfund sites, and 76% of RCRA Corrective Action sites are *not* ready for their anticipated use. This equates to 16.4 million acres or 72% of USEPA land clean-up programs that still need to be addressed.[18] Promontory's *Needs Assessment Report* reported the approximate tonnage of remediated soil from northern and southern California in 2014 and 2015. This quantification was not an exhaustive compilation of all volumes generated. Table 6 illustrates a portion of the market opportunity for Promontory Point Landfill as a rail-served Class V facility.

Table 6. Remediated Soil in Northern and Southern California (2014–2015)

In tons

Source of Waste	2014	2015	Annual Average
Northern California	200,450	387,769	294,110
Southern California	623,014	175,950	399,482

[17] *Biennial Report*, U.S. Environmental Protection Agency, 2016

[18] https://www.epa.gov/cleanups/measuring-progress-epas-land-cleanup-programs

4 Needs Assessment

Section 3 (Demographics and Waste Generation Forecasts) presents the backdrop for the needs assessment information in this section and in Section 5 (Additional Determinations). Promontory's original Class I Permit Application[19] approved by the Utah Department of Environmental Quality for Promontory Point Landfill included the following description for "Purpose and Need":

> The need for the landfill results from the expanding waste disposal requirements of the rapidly growing population in northern Utah. Many of the existing landfills along the Wasatch Front are nearing closure or are under scrutiny due to encroachment of expanding urban areas. The proposed landfill would provide an alternative disposal option for the municipalities and counties of Utah, while offering the advantages of low operational cost, long-term capacity, and relatively low transportation costs.

As mentioned in Section 1.1 (Purpose of This Report Addendum), the information in this report addendum is required pursuant to Utah Code Title 19, Chapter 6, Part 1, Section 108, § 10 and § 11 of the Utah Solid and Hazardous Waste Act. Section 4 (Needs Assessment) of this report addendum is organized according to, and provides information to address, each of the three main code subsections quoted below.

> Utah Revised Statutes § 19-6-108 (10): The director may not approve a commercial nonhazardous solid or hazardous waste operation plan unless it contains the information required by the board, including:
>
> (a) evidence that the proposed commercial facility has a proven market of nonhazardous solid or hazardous waste
>
> (b) a description of the public benefits of the proposed facility
>
> (c) compliance history of an owner or operator of a proposed commercial nonhazardous solid or hazardous waste treatment, storage, or disposal facility, which may be applied by the director in a nonhazardous solid or hazardous waste operation plan decision, including any plan conditions.

4.1 Proven Market for Nonhazardous Waste

This section provides information to the Director to evaluate Utah Code § 19-6-108 (10) (a), which requires evidence that the proposed commercial facility has a proven market of nonhazardous solid or hazardous waste.

As described in Section 3.2 (Waste Market) and shown above in Table 2 and Table 3, there is no shortage of waste in northern Utah now (between 1,981,247 and 2,677,360 tons), and there will be even more in the future as waste grows exponentially to a projected ***annual*** **tonnage of between 3,227,000 and 4,361,000 tons in 2050 and between 3,721,000 and 5,029,000 tons by 2065. Annual waste volumes are expected to grow by 63% by 2050 and 88% by 2065** in the seven northern Utah counties.

[19] Refer to footnote 3 on page 5.

Utah's communities demand low-price disposal. Therefore, market viability comes down to economics and the overall waste-disposal system costs for communities and businesses. System-wide costs include collection, transportation, and disposal costs (also known as "tipping fees") as described below.

Collections

Waste-collection costs vary, and, because collections are provided to residents by municipalities directly or from private waste-collection companies, it is difficult to accurately quantify these costs without a thorough review of all city finances. Collection costs are a function of the number of collection vehicles needed to serve a community and the distance to a drop-off location, either a landfill or a transfer station. As some municipally owned landfills close, municipalities will incorporate transfer stations and begin hauling waste to more-remote regional landfills. This report addendum does not analyze future collection cost effects from regionalization, since the collection costs for these communities will not be significantly different as they change the collection drop-off point from landfills to transfer stations or as existing transfer station operators change their destination landfills.

Transportation

As the trend of waste disposal consolidation continues, the transportation cost to haul waste to more-remote regional facilities becomes an important factor for waste-management districts. Transportation costs with a truck trailer are a function of distance, travel times, transfer truck payload, and the amount of time spent at the transfer station and landfill, which all define cycle times and the number of transfer trucks and trailers required to move the waste. Section 4.1.2 (Market Analysis) discusses factors affecting transportation costs and why Promontory Point Landfill is a cost-effective option for northern Utah communities.

Tipping Fees

Disposal fees, or tipping fees, vary in Utah and in the region. Tipping fees are a function of operations, capital and operating costs, and, for commercial companies, a return on investment. The tipping fee, expressed as cost per ton ($/ton) of waste, is affected by the tonnage received at a particular landfill. Because fixed costs do not change and operating costs do not correlate with tonnage on a one-to-one basis, tipping fees can decrease as tonnage increases and landfills become more efficient. Because siting and building a new landfill is very expensive and might not be politically possible,[20] this economy of scale is vitally important as smaller municipal landfills close and as their operations require the use of transfer hauling to larger regional landfills. Promontory Point Landfill can guarantee airspace and will offer tipping fees that are competitive and give communities long-term cost certainty for disposing of their waste.

[20] *Information Sheet – Bayview Landfill Project*, FAQ #4, Northern Utah Environmental Resource Agency (NUERA), no date. Refer to Appendix D.

4.1.1 Waste Source

UT Rev. Stat. § 19-6-108 (10) (a) (i)

Information on the source, quantity, and price charged for treating, storing, and disposing of potential nonhazardous solid or hazardous waste in the state and regionally ...

As described in Section 2.4.1 (Box Elder County Support), Box Elder County desires to have a regional facility to increase its waste volumes and benefit from economies of scale to lower disposal prices and also to attract businesses to the area. As described in Section 2.4.2 (Economic Benefits), Box Elder County and the State will both benefit economically and fiscally due to the direct and indirect economic activity generated by Promontory Point Landfill's operation. In order to maximize these benefits, Box Elder County supports a Class V designation for Promontory Point Landfill.

As described in Section 3.2 (Waste Market), the source of waste for Promontory Point Landfill will consist of municipally and commercially generated waste from northern Utah, C&D and industrial nonhazardous waste generated within Utah, and other regional nonhazardous waste:

Northern Utah

Salt Lake County is served primarily by two Class I landfills, Trans-Jordan Landfill and the Salt Lake Valley Solid Waste Management Facility (SLVSWMF), and by two Class V landfills (Intermountain Regional Landfill and Wasatch Regional Landfill, located in Utah County and Tooele County, respectively). Waste from southern Utah County is committed to the Bayview Landfill, and waste in northern Utah County is shipped to Bayview, Wasatch Regional, and Intermountain Regional. The percentage of total waste that is generated in Salt Lake and Utah Counties and that is going to various Class I and Class V landfills is not known because the landfills do not report the waste source in their annual reports.

SLVSWMF recently processed a permit modification for a vertical expansion that will provide disposal capacity for over 66 years. Trans-Jordan is closer to other Class I (Bayview) and Class V (Intermountain Regional and Wasatch Regional) landfills, so Promontory did not include Salt Lake County waste as a source in its economic feasibility analysis. Similarly, Cache County is in the process of switching to Logan City North Landfill, which has 81 years of capacity, as reported by SC&A. Therefore, Promontory also does not assume that Cache County would use Promontory Point Landfill. Note, however, that Promontory Point Landfill is a completely feasible option for all of the communities in Salt Lake, Utah, and Cache Counties.

Promontory Point Landfill's primary, locally generated wasteshed is waste from Davis County cities and communities to the north. Some of this waste is managed by Wasatch Integrated Waste Management District and by Weber County, which have operating interest in Bayview Landfill. Promontory estimates that Bayview Landfill will fill faster than SC&A reported, and the communities served by Bayview Landfill will eventually need another long-term disposal option. Refer to Section 4.1.3 (Review of Other Waste Facilities) for estimates of Bayview Landfill's capacity given its anticipated future waste volumes.

As shown in Section 4.1.2 (Market Analysis), based on transportation costs, Promontory Point Landfill is a cost-effective solution for waste from Davis, Weber, Morgan, and Box Elder Counties. Table 7 presents the estimated waste volumes (annual tons) from these counties now and in future years. As shown in Table 7, annual waste generation from these counties is forecasted to increase by almost 50% by 2050 and by almost 63% by 2065.

Table 7. Annual Municipal Solid Waste Generation in Northern Utah[a]

In tons per year[b]

County	2015	2050	2060	2065
Davis	368,020	540,123	577,662	596,729
Weber	265,797	390,709	415,388	426,321
Box Elder	58,003	84,832	91,157	94,409
Morgan	12,133	24,066	25,823	26,351
Total	**703,953**	**1,039,730**	**1,110,030**	**1,143,810**
Percent increase	—	47.7%	57.7%	62.5%

[a] Values are repeated from Table 3 and exclude Cache County waste.
[b] Estimated based on population forecasts and a waste-generation rate of 6.0 pounds per person per day to account for future C&D waste.

When Promontory Point Landfill secures a portion of this municipal waste and/or regional industrial waste, there will be more-than-adequate tonnage to operate the landfill efficiently and to offer competitive tipping fees. All of these counties will benefit from lower disposal costs provided by Promontory Point Landfill.

The investment in the rail infrastructure expands hauling options for communities that are transitioning to hauling waste to more-remote regional landfills. Being immediately adjacent to a UP main line means that Promontory Point Landfill potentially would have more-direct and -frequent rail service. Therefore, depending on the rail rates, total tonnage, and locations of consolidation points, it might be feasible to haul waste from northern Utah communities by rail to Promontory Point Landfill. As discussed in Section 3.2.2 (Industrial Waste), DWMRC reports a total industrial waste disposal of over 1,200,000 tons. Because landfills do not report the source of this waste, it is unclear exactly how much of this waste is generated in Utah and how much is imported from other states. Nevertheless, as population grows, industrial waste is expected to grow since employment will need to keep up and provide jobs for the growing population. Promontory Point Landfill will provide a long-term disposal option for existing and future industrial waste from the state.

Regional Waste

Promontory Point Landfill offers an economically favorable disposal option for materials that are nonhazardous but more heavily regulated in other states. Where heavy industries are located far from disposal sites but are adjacent to a rail line, rail hauling to Promontory Point Landfill offers a cost-competitive solution considering the overall system costs, as described in Section 4.1.2 (Market Analysis).

Promontory expects to capture a percentage of regional industrial and special waste. Assuming that only 15% to 20% of regional nonhazardous industrial waste (1,200,000 tons) and remediated soil from northern California (294,110 tons) and southern California (399,482 tons) is disposed at Promontory Point Landfill, Promontory reasonably expects to secure about 284,000 to 379,000 tons annually. This would be in addition to any municipal waste volumes listed in Table 7 above.

Price Charged

The prices charged vary and depend on many factors including waste type, the total tonnage from a specific customer, and the delivery method. Tipping fees from other state and regional, private, commercial/industrial landfills are unavailable because that pricing information is proprietary. CalRecycle, in its 2015 report *Landfill Tipping Fees in California*, acknowledges the proprietary nature of tipping fees. In its research, SC&A estimated that disposal fees in California are about $60/ton (refer to Appendix E). In Promontory's experience, California's tipping fees are commonly $65/ton or higher.

The Northern Utah Environmental Resource Agency (NUERA)[21] reports that "nationally, landfill tipping fees average around $45/ton and are commonly around $80/ton" and that "tipping fees in the Denver area appear to be about 25% higher than tipping fees along the Wasatch Front."

The fees charged to Promontory's customers are also proprietary. Promontory Point Landfill's operating costs would be similar to those of other Utah area landfills (with tipping fees less than $30/ton) because amortized capital and mobile equipment costs, equipment operating costs, and labor costs would be similar for a similar level of operation.

4.1.2 Market Analysis

UT Rev. Stat. § 19-6-108 (10) (a) (ii)

Market analysis of the need for a commercial facility given existing and potential generation of nonhazardous solid or hazardous waste in the state and regionally ...

Utah's communities demand low system-wide costs. System-wide costs are the "all-in" costs of collection, transportation, and landfill disposal costs (disposal costs are also called "tipping fees") as described in Section 4.1 (Proven Market for Nonhazardous Waste). For the purpose of the Class V Permit Application, need is defined by market viability and an analysis that shows how Promontory Point Landfill is a cost-effective, long-term option for northern Utah communities. Market viability comes down to economics and the overall waste-disposal system costs for communities and businesses. The following sections describe one important aspect of the system-wide costs: transportation costs.

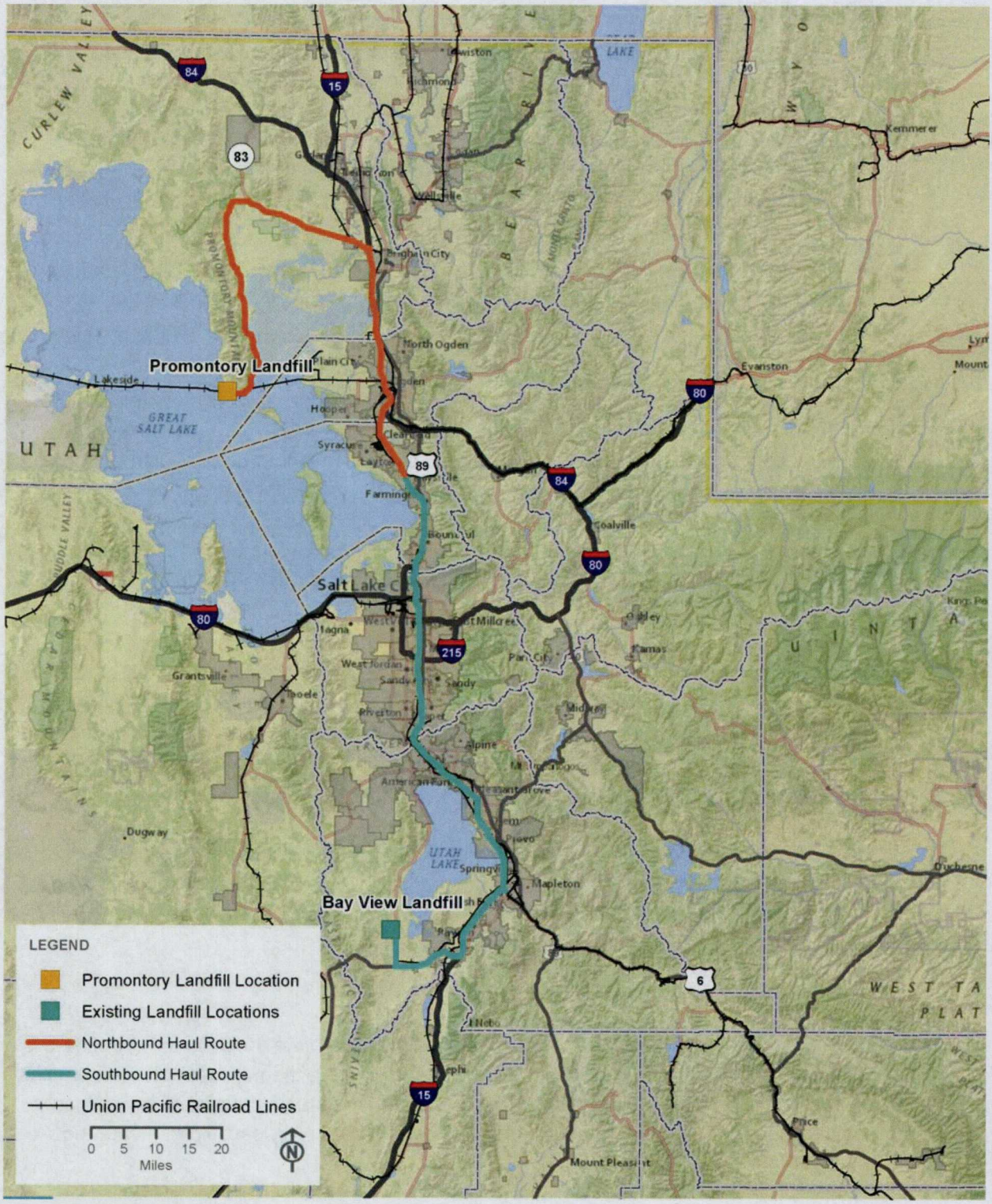
Trucking Costs

Trucking costs are a function of distance (miles) or travel time (hours), which define cycle times (loading, outbound travel, unload, and return travel), the number of transfer trucks required, and transfer truck payload (tons). Promontory used Utah's maximum gross vehicle weight, 80,000 pounds (40 tons), as the maximum payload. To evaluate the

[21] Refer to footnote 20 on page 20.

range of hauling costs, Promontory determined the approximate midpoint between the southernmost landfill option, Bayview Landfill, and Promontory Point Landfill. These landfills are separated by about 200 miles along the main haul route, Interstate 15 (I-15). The 100-mile midpoint is near where U.S. Highway 89 and I-15 converge in the Layton–Kaysville area (Figure 4).

Figure 4. Northbound and Southbound Haul Routes (100-mile Distance)



Promontory used a cost as a function of distance ($3.00 per mile[22]) and a cost as a function of time ($150 per hour[23]) equations to define a hauling cost range. The hauling cost calculation using the per-mile cost is the rate ($3.00 per mile) multiplied by the distance (200 miles round trip) divided by the payload (40 tons). The resulting transportation cost is about $15 per ton (refer to the equation below). Haul distances farther than this result in a slightly higher cost, and it would follow that shorter hauling distances are slightly less expensive.

$$\text{Hauling cost} = \frac{\frac{\$3.00}{\text{mile}} \times 200 \text{ miles}}{40 \text{ tons}} = \$15/\text{ton}$$

Trucking cost using the time relationship ($150 per hour) is more complicated because travel times are based on speeds, which can vary by the class of road and its speed limit, and actual travel speeds can vary considerably based on traffic conditions. The $15/ton hauling cost is equivalent to about a 4-hour cycle time for that 200-mile round trip assuming free-flowing traffic and an average trip speed of about 50 miles per hour (mph).

Using the mileage rate function does not account for differences in expected travel and cycle times, which are important considerations because these factors affect the required number of haul vehicles needed to transfer waste. For example, with a 4-hour cycle time, a transfer truck could make two round trips in a standard 8-hour work day. If the cycle time increases to 6 hours, hauling the same amount of waste would require additional vehicles and drivers or, if two cycles are made, it would extend the workday to 12 hours and increase labor costs.

Traffic congestion on I-15 is expected to worsen over time as the Wasatch Front's population grows. This congestion will lead to longer travel times and increased vehicle emissions. In order to determine future transportation costs, Promontory obtained estimated future travel times on I-15 and then added calculated travel times based on speed limits for the less-congested segments of the two haul routes. Travel times for I-15 in the southbound direction were obtained from the Central Corridor Study technical memoranda.[24] Travel times on I-15 in the northbound direction were obtained from the West Davis Corridor *Travel Demand Model Report*.[25]

These two references have different timeframes. The West Davis Corridor report analyzed baseline conditions in 2011 and projected conditions in 2040. The Central Corridor Study technical memoranda used a baseline of 2014 and projected conditions in 2050. The travel times in the AM peak (6:00 to 9:00 AM) and PM peak (3:00 to 6:00 PM) periods were provided for each direction. The calculated travel times for the periods were averaged because travel times are a function of travel direction and time of day. For example, morning traffic on I-15 in the southbound direction through Salt Lake County (a 32-minute modeled travel time) is much lighter than in the southbound direction in the

[22] *Solid Waste Master Plan Update*, Wasatch Integrated Waste Management District, 2017

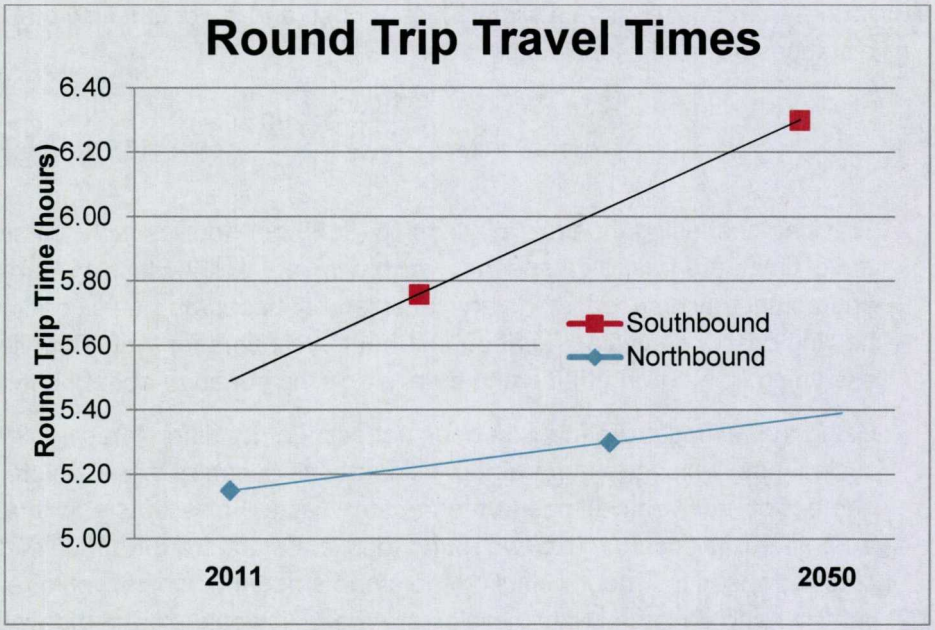
[23] "Rail Intermodal Rates Reflect Truck Trends," DAT Solutions, https://www.dat.com/blog/post/Rail-Intermodal-Rates-Reflect-Truck-Trends, December 22, 2015

[24] *Wasatch Front Central Corridor Study 2050*, Wasatch Front Regional Council, http://wfccstudy.org, May 2017

[25] West Davis Corridor Project, Technical Report 7, *2040 Travel Demand Model Report*, Utah Department of Transportation, 2016

evening (a 61-minute modeled travel time). The resulting round-trip travel times are plotted in Figure 5.

Figure 5. Round-Trip Travel Times from Midpoint to Promontory Point Landfill



The round-trip travel time from the midpoint shown above in Figure 4 hauling south is calculated to be about 5.76 hours (including 30 minutes of loading and unloading time) in 2014. The round-trip travel time from the midpoint hauling north is calculated to be about 5.20 hours in 2014. Because I-15 is expected to exceed its capacity in Salt Lake County by 2030 and because the travel time on I-15 is longer going south, the travel time difference is anticipated to increase dramatically in future years, as shown above in Figure 5. The round-trip travel time in 2050 is calculated to be about 5.40 hours going north, a 12-minute increase over 2014. The round-trip travel time going south in 2050 through congestion on I-15 in Salt Lake County (6.30 hours) is calculated to be about 32 minutes longer than in 2014 in congested but flowing traffic conditions.

Hauling Costs in 2017. Assuming that the waste from Weber County (186,000 tons) and Wasatch Integrated Waste Management District (125,000 tons will be transferred) in 2017 would originate at the assumed midpoint, and using a $150-per-hour rate for a 40-ton payload, the hauling cost would be about $19.92 per ton to Promontory Point Landfill and $21.47 per ton to Bayview Landfill. Note that these two districts' transfer stations are both located north of the midpoint, so costs could be slightly less than estimated, and future hauling cost could vary depending on actual fuel, labor, and equipment costs.

Hauling Costs in 2050. The difference between cycle times hauling south (6.3 hours) compared to hauling north (5.4 hours) in 2050 is calculated to be 54 minutes in congested-but-moving conditions on I-15. Inflating the waste volumes by 2% per year to 2050 (597,000 tons) and using the calculated round-trip haul time in 2050 results in a hauling cost of $20.25 per ton to Promontory Point Landfill versus $23.47 per ton to Bayview Landfill, a 16% increase. **Promontory Point Landfill could save these districts almost $2 million annually in hauling costs.**

Table 8 summarizes hauling cost differences based on travel times. Refer to Appendix C for more information.

Table 8. Travel Time and Cost Differences from Midpoint to Promontory Point Landfill and Bayview Landfill

Direction and Destination	Travel Time		Cost	
	2017	2050	2017	2050
Midpoint to Promontory Point Landfill on northbound I-15 (round trip)	5.20 hours	5.40 hours	$19.92/ton	$20.25/ton
Midpoint to Bayview Landfill on southbound I-15 (round trip)	5.76 hours	6.30 hours	$21.47/ton	$23.47/ton
Difference (southbound compared to northbound)	34 minutes (+11%)	54 minutes (+17%)	$1.55/ton (+8%)	$3.22/ton (+16%)
Total annual savings[a]				**$1,927,950**

[a] Assumes a combined 597,000 tons of waste from Weber and Davis Counties in 2050.

As mentioned in Section 4.1 (Proven Market for Nonhazardous Waste), waste tends to flow to most cost-effective option. Trucking costs are an important factor, and, considering the projected congested conditions along I-15, Promontory Point Landfill offers a competitive choice for northern Utah communities.

The decreased travel times have air quality benefits. Vehicle emission rates vary based on travel speeds. At low speeds (less than about 30 mph), emissions from heavy truck are about 50% higher than at cruising speeds (40 to 60 mph).[26] Trucks traveling in highly congested traffic conditions are expected to emit more pollutants given both their higher emission rates at lower speeds and their longer engine run times.

Rail Hauling

As with in-state customers, the value for an out-of-state customer to use Promontory Point Landfill also depends on transportation costs. The rail-haul cost will vary by location and market conditions. However, unlike truck hauling, which has a linear cost relationship (a cost-per-time or cost-per-distance relationship as described in the previous section), the rail-haul cost is not a function of the distance hauled but is priced on a "value-of-service" basis. This means that, because truck transportation is available everywhere, if the rail transportation costs are marginally less than the trucking costs, rail hauling is a viable option.

In addition, because railroads are sharing their track capacity assets among many shippers, they create a tiered pricing structure that ranks shippers in priority from the "richest" shippers (product or commodity) down to the "poorest" shippers. Once the capacity is exhausted, or "constrained," some shippers simply get priced out. Large quantities of nonhazardous industrial waste, environmental remediation refuse, and contaminated soils can generally pay the railroads well enough to overcome any capacity

[26] *Heavy-Duty Diesel Vehicle Emissions Modeling in California's EMFAC Model*, California Air Resources Board, November 2016

constraints and overcome pricing pressures out of California and many other western and central U.S. locations.

Because Promontory Point Landfill can offer tipping fees that will make the overall disposal costs (including hauling and tipping) economical, customers could ship waste to Promontory Point Landfill via rail. For example, when rail-haul costs are less than about $60 per ton, which they often are, Promontory Point Landfill becomes a financially viable disposal option for waste from California (Table 9) because its tipping fees are in the mid $20 to mid $30 per ton range, similar to other large landfills in Utah.

Table 9. Cost Comparison

Disposal Location	Tipping Fees (per ton)	Transportation Costs (per ton)	All-In Disposal Costs (per ton)
Promontory Point	$25–$35	$60 for rail to Promontory	$85–$95
California landfills	$60–$90	$30 for local truck haul[a]	$90–$120

[a] A $30/ton haul would be about 200 miles at $3.00 per mile. The rate per mile might be higher in California where truck payload limits are smaller.

4.1.3 Review of Other Waste Facilities

UT Rev. Stat. § 19-6-108 (10) (a) (iii)

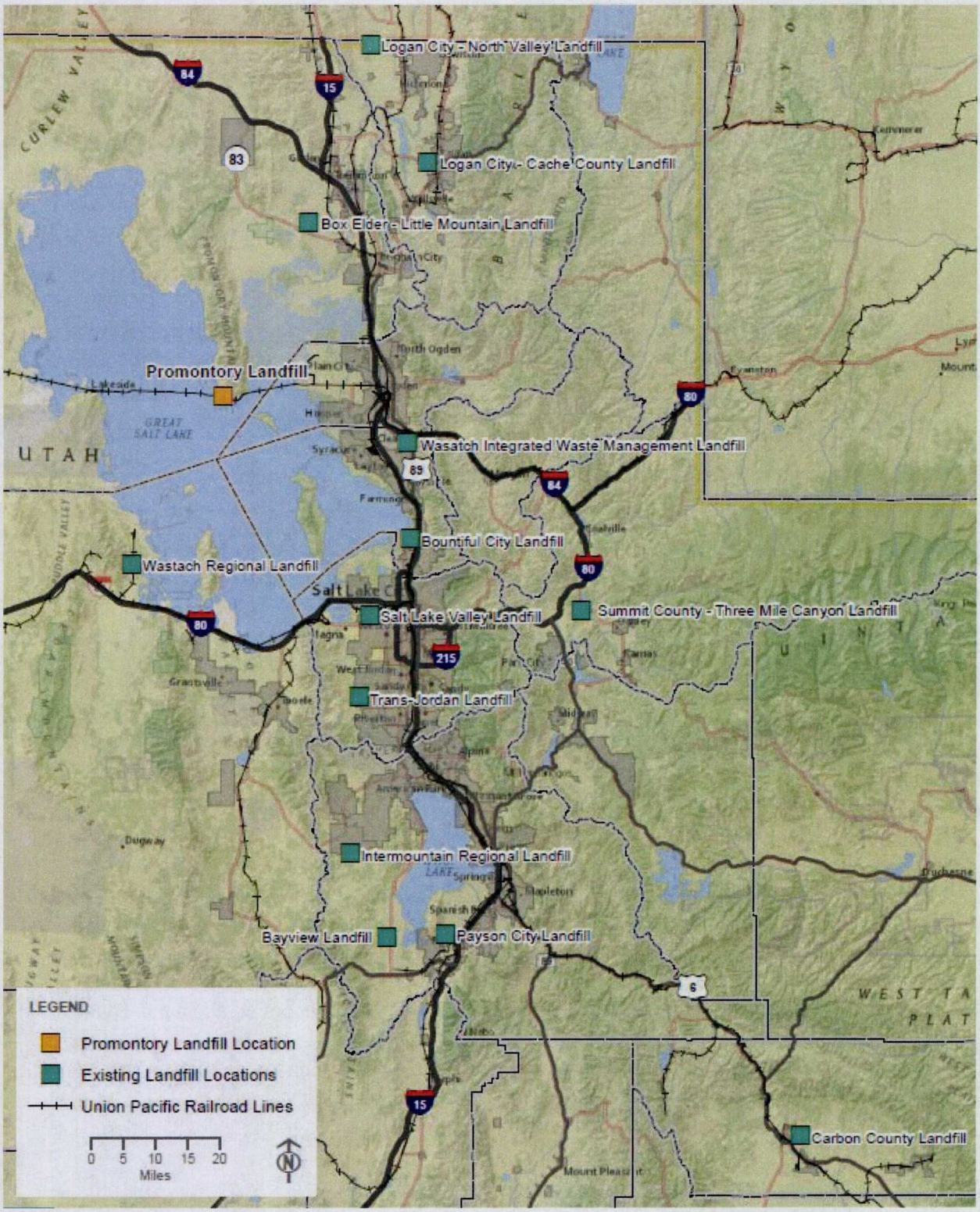
Review of other existing and proposed commercial nonhazardous solid or hazardous waste facilities regionally and nationally that would compete for the treatment, storage, or disposal of the nonhazardous solid or hazardous waste …

DWMRC identifies 17 Class V landfills in the state.[27] Some Class V landfills are in rural counties or are designated for special waste (C&D and asbestos) and therefore would not compete with Promontory Point Landfill. Two Class V designated facilities are Energy Solutions' Clive facility and Clean Harbors Grass Mountain, which are designated for radioactive and hazardous waste, respectively. These two facilities would also not compete for the nonhazardous waste disposal offered by Promontory Point Landfill.

The four Class V landfills in northern Utah that could compete for nonhazardous waste were identified in the SC&A *Evaluation Report* as ECDC Environmental, Payson City Corporation, Intermountain Regional, and Wasatch Regional. The Bayview Class I landfill is another competitor. If it obtains contracts with local governmental entities so that it can maintain its Class I landfill designation, it can receive waste from outside its historic wasteshed (the South Utah Valley Solid Waste District [SUVSWD]). These Class V and Class I landfills are shown in Figure 6 and discussed in more detail below.

[27] https://deq.utah.gov/ProgramsServices/programs/waste/solidwaste/disposalfacilities.htm

Figure 6. Existing Landfill Locations



ECDC Environmental Landfill, Class V

ECDC is located in East Carbon City, Carbon County, Utah. It is a Class V landfill owned and operated by Republic Waste Services, Inc., the second-largest waste-services company in the nation. The landfill sits on about 2,400 acres[28] and has reported a remaining waste capacity of over 1,000 years.[29] ECDC reported 16,171 tons and 15,349 tons of MSW and 284,002 tons and 324,255 tons of industrial waste in 2014 and 2015, respectively. Republic did not report the in-state industrial tonnage; Promontory believes that the majority of the industrial waste to ECDC originates outside of Utah.

Historically, two Wasatch Front communities rail-hauled their waste to ECDC. However, rail hauling became unreliable because of rail service logistics to this site. Promontory believes that the short line from UP to ECDC, which was operated by ECDC with its owned or contracted engines, was costly to operate and had a slow turn-around time for returning rail cars to customers. Because of the hauling distance (324 miles round trip from a Wasatch Front midpoint in Kaysville along Interstate 16 and U.S. Highway 6), even in the best free-flowing traffic and good weather conditions, it is uneconomical ($24 to $30 per ton[30]) to transfer waste over the road to ECDC from northern Utah communities unless a extremely low tipping fee can compensate for the collection, transfer, and hauling costs associated with using ECDC.

ECDC's tipping fees are not known. It appears that, rather than reduce its tipping fee at ECDC, Republic opened the Wasatch Regional Landfill in Tooele County to compete for some northern Utah municipal waste.

Payson City Corporation Landfill, Class V

Payson City Corporation Landfill is a small, 30-acre, Class V landfill in Utah County about 2.5 miles west of Payson. As reported in 2004, the capacity of Payson Landfill was 770,560 tons (or 75 years).[31] Using these values, the estimated annual tonnage is 10,274 tons. Payson Landfill reported a tonnage of 18,350 tons in 2013, representing a 6.7% annual growth rate from 2004 to 2013. Assuming a 2% annual waste growth rate starting in 2013 and assuming the same capacity (770,560 tons), Payson Landfill has about 22 years of landfill capacity.

Based on its small landfill volume, Payson City Corporation is likely not actively seeking additional waste streams for the landfill because receiving a significant increase in waste would quickly deplete the landfill's capacity. For example, increasing the current waste tonnage at Payson Landfill in 2018 by 2.5 times would be about an additional 50,000 tons, which is equivalent to about one-third of Bayview Landfill, one-sixth of Trans-Jordan Landfill, or about one-fourth of Weber County's waste. Such an increase in the current waste tonnage at Payson Landfill would consume the landfill space by 2025, or 7 years. Therefore, Payson Landfill appears to not be a viable long-term disposal option.

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[28] https://deq.utah.gov/businesses/E/ECDCEnvironmental/docs/2008/11Nov/ECDC_Permit_Application.pdf

[29] Refer to footnote 2 on page 2.

[30] Calculated assuming a 40-ton truck at $3 per mile or an 8-hour, 320-mile round-trip at $150 per hour.

[31] https://deq.utah.gov/businesses/P/PaysonCity/PaysonClassVLandfill.htm

Intermountain Regional Landfill, Class V

Intermountain Regional Landfill (IRL), another Class V landfill, is located south of Fairfield in Utah County. It is owned and operated by ROC Fund Landfill Holdings, LLC. IRL was opened in 2012. It sits on half a section (320 acres) and has a capacity of about 17,340,000 tons.[32] At this capacity and current waste tonnage, IRL has capacity for over 50 years. The tipping fee at IRL is not known. It is served mainly by private haulers that use a transfer station/recycling center in Salt Lake County.

The reported tonnage received at IRL in 2015 was 139,140 tons. IRL's Class V Permit Application[33] identifies the area of northern Utah County and southern Salt Lake County as its potential wasteshed. In 2018, the North Pointe Solid Waste Special Service District's contract with Republic Waste Services, Inc., expires.[34] If IRL is successful in securing all of northern Utah County's waste, it could add up to 247,000 tons in 2018.[35] Similarly, if Trans-Jordan Landfill closes in 5 to 7 years because of development pressures, IRL could also dispose of waste from southern Salt Lake County. Assuming an additional year-2020 waste volume from southern Salt Lake County communities of 343,369 tons,[36] the total tonnage to IRL could be as high as 755,690 tons in 2020. At this tonnage, IRL would reach capacity in 2036, only **18 years** from 2017 (refer to Appendix C).

If the North Pointe Solid Waste Special Service District and Trans-Jordan Cities were to first use Bayview Landfill (refer to the section below titled NUERA Bayview Landfill, Class I) and then switch to use IRL's airspace, the total landfill capacity in Utah County would be consumed by 2053, or **36 years** from 2017 (refer to Appendix C).

Wasatch Regional Landfill, Class V

Wasatch Regional Landfill is located about 6 miles north of Interstate 80 in Tooele County. The landfill is about 1,969 acres. In 2015, Wasatch Regional reported that 517,110 tons of MSW and 57,013 tons of C&D waste were disposed of at the landfill. The total capacity is reportedly 305 years.[37] Currently, waste for Wasatch Regional comes from transfer stations in Lindon, Tooele County, Weber County, and Salt Lake City.

The future annual waste volumes and resulting capacity (or landfill "life") are not known. The North Pointe Solid Waste Special Service District's contract with Wasatch Regional Landfill expires in 2018, and IRL and Bayview Landfill offer cost-effective solutions based on the anticipated hauling costs (IRL is 30 miles from the Lindon transfer station versus 99 miles from Lindon to Wasatch Regional Landfill) from North Pointe.

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[32] *Intermountain Regional Class V Landfill Permit Modification*, DWMRC, March 2017

[33] *Application for a Permit to Operate a Class V Landfill*, HDR, February 2011

[34] *NUERA Bayview Landfill Project Plan*, Draft, https://www.utah.gov/pmn/files/240641.pdf, accessed September 26, 2017

[35] Based on North Pointe's 2015 MSW and C&D waste inflated by 2% per year to 2018

[36] Based on Trans-Jordan's reported 2015 MSW and C&D waste inflated by 2% per year to 2020

[37] Refer to footnote 2 on page 2.

Northern Utah Environmental Resource Agency (NUERA) Bayview Landfill, Class I

NUERA's Bayview Landfill is not a commercial Class V landfill. It is another disposal option for some municipally generated waste. If NUERA secures contracts solely with local governments for the waste generated within the governmental boundaries, Bayview Landfill can maintain its Class I (noncommercial) designation.[38] However, this facility is mentioned because the capacity estimates provided to SC&A (85 years) might not have considered Bayview Landfill's future waste volumes.

NUERA is an interlocal cooperative entity established to "provide environmentally sound, cost-effective, solid waste management services for the communities of northern Utah while encouraging source reduction and recycling."[39] NUERA's members are:

- South Utah Valley Solid Waste District (SUVSWD)
- North Pointe Solid Waste Special Service District (NPSWSSD)
- Trans-Jordan Cities
- Wasatch Integrated Waste Management District (WIWMD)
- Weber County
- Logan City

NUERA recently purchased Bayview Landfill from SUVSWD because the landfill is currently underutilized (meaning it could process more waste given its current equipment and personnel). Like Box Elder County, NUERA realized the economies of scale that could be recognized by increasing the waste stream and helping to maintain lower landfill operating costs as a cost per ton. For example, Bayview Landfill's operating cost, on a per-ton basis, was forecasted to decrease by about 13% by adding 34,800 tons, which is a throughput increase of 26%.[40] This waste is coming from the North Pointe Solid Waste Special Service District in 2017 and is 20% of North Pointe's total tonnage. This operating cost decrease can lower tipping fees and can affect the feasibility of adding transfer stations to a waste district's system in that overall cost increases of system changes are minimized. Promontory Point Landfill offers the same economy-of-scale benefit to northern Utah communities.

Bayview Landfill was quoted as having a capacity of 25,000,000 tons,[41] or 85 years.[42] However, the annual waste tonnage assumption used in the capacity calculation is not known. In order to estimate the remaining capacity, Promontory reviewed waste volumes from various NUERA members in 2015 and then projected when, without Promontory Point Landfill, these districts might need to use Bayview Landfill.

As you can see in Table 10, Trans-Jordan Cities and Wasatch Integrated Waste Management District are nearing capacity in their landfills and are currently dealing with end-of-landfill-life issues. For example, as noted in Table 10, Wasatch Integrated Waste Management District is building a transfer station capable of processing 125,000 tons per

[38] State of Utah Attorney General's opinion on commercial landfills, August 8, 2002

[39] Refer to footnote 20 on page 20.

[40] Refer footnote 33 on page 31.

[41] Remaining Landfill Cell 2 and Cell 3 capacity from Bayview's 2011 permit application.

[42] *Evaluation of the Promontory Point Resources, LLC, Needs Assessment Report*, Table 1: Capacity of Select Utah Landfills, SC&A, July 2017

year and will start transferring this tonnage[43] despite the remaining capacity at Davis Landfill. Similarly, Trans-Jordan Landfill is situated in a prime development area for Salt Lake County, and for some time Trans-Jordan Cities has been dealing with pressure to close the landfill early because of encroaching developments. Whether Trans-Jordan Landfill can utilize its remaining capacity remains to be seen.

Table 10. Municipal District Summary

District/Facility	2015 Waste (tons, approx.)	District-Owned Landfill Capacity	Landfill(s) Used
SUVSWD Springville Transfer Station	134,000	Not applicable[a]	Bayview
North Pointe Lindon Transfer Station	247,700	Not applicable[b]	Wasatch Regional and Bayview
Trans-Jordan Cities	312,000	15 years	Trans-Jordan
Wasatch Integrated Waste Management District/Davis Landfill	300,000 (125,000)[c]	23 years	Davis County and Bayview
Weber County	186,600	Not applicable[d]	Wasatch Regional
Box Elder County	38,000	38 years	Little Mountain
Logan City North Valley	Not applicable[e]	81 years	Logan-Cache and Logan-North Valley

[a] SUVSWD sold Bayview Landfill to NUERA.
[b] North Pointe does not operate a landfill; it uses Wasatch Regional Landfill and is starting to use Bayview Landfill.
[c] Wasatch Integrated is building a transfer station to process 125,000 tons and transfer it to Bayview Landfill in late 2018 or early 2019.
[d] Weber County uses a transfer station to haul waste out of the county to Wasatch Regional Landfill.
[e] Logan City recently sited a new landfill in northern Cache County to provide long-term waste disposal and is therefore not included in the capacity estimates presented in this section.

The following two sections provide landfill life estimates for Bayview Landfill under two scenarios. These scenarios are based on recent developments in the waste market for NUERA members.

Scenario 1 – Initial Bayview Scenario

Scenario 1 represents an initial waste tonnage scenario in which SUVSWD, North Pointe Solid Waste Special Service District, and Trans Jordan Cities use Bayview Landfill. North Pointe can transfer 20% (34,800 tons) of its waste until 2018 and has started to do so. North Pointe's contract with Wasatch Regional Landfill expires in 2018. Because of the more economical transfer haul, North Pointe could decide to move all of its projected 252,654 tons to Bayview Landfill in 2018. In this analysis, Promontory assumes that Trans-Jordan Cities would begin transferring waste to Bayview Landfill in 10 years. Assuming a 2% growth rate, this waste from Trans-Jordan Cities would be 403,605 tons in 2028. Adding SUVSWD's waste and assuming a 2% growth rate, the capacity of Bayview Landfill is about **29 years**. Refer to Appendix C for calculations.

[43] *RFP 2017-09 and Update to the 2013 Integrated Solid Waste Management Plan*, GBB, June 2017

Scenario 2 – Aggressive Waste Assumptions

Scenario 2 is a more aggressive scenario in which all NUERA members (except Logan) move their waste to Bayview Landfill within 5 years. In addition to SUVSWD, North Pointe, and Trans-Jordan Cities (assumed to switch within 5 years), this scenario assumes that Wasatch Integrated Waste Management District provides 125,00 tons in 2018 (note that the calculation does not include the remaining 185,000 tons that will presumably remain at Davis Landfill), and Weber County transfers 186,000 tons in 2020. The total tonnage going to Bayview Landfill in 2022 is estimated to be 1,098,043 tons. Assuming 2% growth for this waste, Bayview Landfill would reach capacity in **21 years**. Refer to Appendix C for calculations.

Summary of Other Commercial Landfills

Many municipal waste districts along the Wasatch Front with landfills are facing end-of-landfill-life issues. Given the anticipated population growth, waste volumes will increase dramatically in the future. NUERA attributes Utah's low tipping fees to the existence of municipally owned landfills with publicly posted rates.[44] The regionalization of the municipal waste will keep disposal fees low by taking advantage of economies of scale. However, under the assumptions listed above for the two NUERA Bayview Landfill scenarios, municipal owned landfills owned by NUERA members could have as little as 21 to 29 years of life.

Other commercial landfills in northern Utah (Intermountain Regional and Wasatch Regional) are viable options for some of this municipal waste. Promontory Point Landfill offers another cost-competitive commercial landfill option for the northernmost Wasatch Front communities. Refer to Section 4.1.2 (Market Analysis) for trucking cost estimates that show the benefit of Promontory Point Landfill. NUERA states that, in the past, "when municipally owned landfills have been closed and replaced by only one or two privately owned landfills, tipping fees have soared."[22] Using Promontory Point Landfill would help ensure that IRL and Republic (Wasatch Regional) do not form a duopoly, which could drive disposal prices higher. Using Promontory Point Landfill would extend the life of municipal landfills and help maintain the municipal cost controls quoted by NUERA for a longer period.

If IRL is used by North Pointe Solid Waste Special Service District and Trans-Jordan Cities after Bayview Landfill reaches capacity, in 2046 under Scenario 1, future waste volumes would be so large that IRL would provide only 7 additional years of disposal. Once IRL is full, the total permitted disposal capacity of landfills in Salt Lake County (except the Salt Lake Valley), Davis County, and Utah County would be used in a maximum of 36 years. For more information, refer to Section 4.2.1 (Need for Additional Capacity).

If IRL fills up and Promontory Point Landfill is not available, there would be only one option: Wasatch Regional Landfill. Wasatch Regional Landfill then becomes a monopoly, which is not good for Utah, even if the landfill has adequate disposal capacity.

If Promontory Point Landfill is also used for a portion of municipal waste in northern Utah, this could extend the life of municipal landfills and also provide another commercial option. Giving municipalities a broader choice by introducing additional competition in the commercial sector will help keep disposal rates lower for a longer period.

[44] Refer to footnote 20 on page 20.

In addition, from the perspective of a public waste-management entity, extending the life of some existing landfill operations provides citizens with several long-term benefits. These benefits include a convenient location for self-hauling waste, a location for processing organics, a convenient (closer to demand) compost sales location, more capacity for C&D waste disposal, and a location for disposing of recycling residuals that is closer to the recycling centers. In addition, final landfill closure later allows districts to delay the expense and accrue more funds for other waste infrastructure improvements (transfer stations) or for other waste-reduction and -diversion programs.

4.2 Public Benefits

The public benefits of Promontory Point Landfill are many. To address Utah Code Title 19, Chapter 6, Part 1, Section 108, § 10 (b), Promontory points out the following key benefits:

- Promontory Point Landfill allows the continued regionalization and associated economies of scale for northern Utah communities. With a Class V permit, waste volumes at the landfill will increase, thereby decreasing operational costs ($/ton), and the communities will benefit from lower waste-disposal costs and long-term guaranteed airspace.
- Promontory Point Landfill offers hauling cost-effectiveness now and in future years because I-15 through Davis, Salt Lake, and Utah Counties will exceed capacity and traffic congestion will intensify. Because waste tends to flow to the most cost-effective options, transportation costs are an important factor. Considering the projected congested conditions on I-15, Promontory Point Landfill offers a competitive choice for northern Utah communities. Davis and Weber County could save about $2 million *annually* by 2050.
- Decreased travel time has air quality benefits. Vehicle emission rates vary based on travel speeds. Trucks traveling in highly congested traffic conditions are expected to emit more pollutants given both their higher emission rates at lower speeds and their longer engine run times.
- Promontory Point Landfill addresses the need for a long-term waste-disposal option for future municipal and industrial waste in Utah. Forecasts show annual waste volumes nearly doubling by 2065. As population grows and undeveloped land is developed, it will become more and more difficult to locate and permit new landfills.
- The economic benefits to Box Elder County are also significant and align with Governor Gary Herbert's rural jobs initiative, which aims to strengthen local rural economies, create jobs, and support local business. Table 11 shows how this increased economic activity produces new income, sales tax revenues, and property tax revenues, while the growing population creates the need for additional government expenditures.
- The site will be powered by 100% renewable power. Back-up propane generators will be at the site for emergencies, but Promontory plans to power the site with a solar microgrid.

Table 11. Economic Benefits Summary

Category	Economic Benefits	
	Initially	In 15 Years
Employment		
Box Elder County direct employment	19 jobs	208 jobs
Box Elder County indirect and induced employment	109 jobs	115 jobs
Total state indirect and induced employment	203 jobs	406 jobs
Demographics[a]		
Box Elder County population supported	25 people	38 people
State total population supported	56 people	657 people
Net Revenues[b]		
Box Elder County net revenues	$1,017,300	$2,527,600
Box Elder 15-year net present value	$31,005,600	—
State net revenues[c]	$421,600	$1,048,100
State 15-year net present value	$12,488,100	—
Taxes		
Direct Box Elder County tax revenue	$906,000	$2,200,000
Total state revenue	$649,300	$3,660,400

[a] Includes working populations and their school- and college-age dependents.
[b] Values are net of expenditures. The 15-year averages are reported in Section 2.4 (Development History) of this report addendum.

4.2.1 Need for Additional Capacity

UT Rev. Stat. § 19-6-108 (10) (b) (i)

The need in the state for the additional capacity for the management of nonhazardous solid or hazardous waste …

Municipal landfills might not last as long as reported in the SC&A *Evaluation Report* or as estimated by NUERA and others. Landfill capacity or landfill "life" is a function of annual waste tonnage and waste growth assumptions. The solid waste disposal picture is changing in northern Utah with Wasatch Integrated and North Pointe moving a portion of their waste stream to Bayview Landfill. Since system-wide costs are significant considerations in waste-disposal decisions, it might make sense for southern Salt Lake County and northern Utah County communities to use Bayview Landfill. However, as demonstrated in Section 4.1.2 (Market Analysis), Weber and Davis Counties would have a shorter haul time to Promontory Point Landfill and therefore it would be more economical to haul waste north to Promontory Point Landfill.

If NUERA members move their waste to Bayview Landfill, the capacity of the landfill would be only 21 to 29 years under the two scenarios presented in Section 4.1.3 (Review of Other Waste Facilities). NUERA attributes low disposal rates to the existence of

municipal landfills. NUERA also claims that costs soar when there are only one or two private landfill options. Therefore, adding Promontory Point Landfill to the waste-disposal mix gives municipalities' additional choices regarding whether to use up their landfill's remaining capacity or prolong their landfill's life by using the private sector for a portion of their waste. For those without landfill capacity, Promontory Point Landfill would provide additional private-sector competition (Table 12).

Table 12. Landfill Capacity Summary

Facility	Class	Maximum Capacity
Municipal Facilities		
Bayview Landfill	I	21 to 29 years[a]
Box Elder County Little Mountain Landfill	I	38 years[b]
Trans-Jordan Landfill	I	15 years[b]
Wasatch Integrated Davis County Landfill	I	23 years[b]
Commercial Facilities		
Intermountain Regional Landfill (IRL)	V	18 to 50 years[c]
Promontory Point Landfill	V	100 to 125 years[d]
Wasatch Regional Landfill	V	305 years[b]
Others[b,e]		
Bountiful City Corporation Landfill	I	33 years
Uinta County Landfill	I	10 years
Summit County Landfill	I	7 years
Logan North Valley Landfill	I	81 years
Payson City Landfill	V	75 years

[a] Bayview Landfill scenarios are (1) North Pointe delivers waste in 2018 and Trans-Jordan Cities in 2028 and (2) scenario 1 but with Trans-Jordan Cities' waste in 2022 and adding waste from Wasatch Integrated in 2019 and from Weber County in 2020.

[b] From SC&A *Evaluation Report*. Annual waste and volume assumptions were not provided.

[c] IRL scenarios are: (1) North Pointe and Trans-Jordan Cities deliver waste in 2018 and 2020, respectively and (2) IRL's current waste stream inflated 2% per year.

[d] Capacity of Promontory Point Landfill estimated by (1) assuming 200,000 tons initially and (2) increasing 2% per year and by assuming year 2050 annual waste.

[e] Other facilities include small landfills or those that (like Logan's and Payson's) have committed waste streams and long-term disposal capacities and were, therefore, not included in the Promontory Point Landfill evaluation and its potential local wasteshed. Promontory Point Landfill is a viable option for all of these facilities.

The following items summarize the need for additional capacity for nonhazardous solid waste.

- Using Promontory Point Landfill would help ensure that Intermountain Regional and Republic (Wasatch Regional) do not form a duopoly, which could drive disposal prices higher. NUERA states that, in the past, "when municipally owned landfills have been closed and replaced by only one or two privately owned landfills, tipping fees have soared."
- Providing additional alternatives in the commercial/private sector will keep disposal prices low overall through competitive bidding.
- Box Elder County wants to benefit from the economy of scale offered by a regional facility as do other communities in the state.
- The economy of scale is vitally important as smaller municipal landfills close and as their operations change to use transfer hauling to larger regional landfills. Attempting to site and build a new landfill for a municipality will be expensive individually and might not be politically possible.
- Waste management is an integral part of industry in Utah. The Gardner Policy Institute projects that a 188.7% increase in the administrative and waste services sector is needed to manage future waste generated by Utah's fast-growing population. Promontory Point Landfill would be developed before the anticipated population growth and the need for additional disposal capacity. Promontory Point Landfill expands the waste-disposal choices for Utah communities and businesses.
- Having a long-term and cost-effective waste-disposal infrastructure that can offer liability indemnification to help attract industry to Box Elder County.
- Using Promontory Point Landfill would extend the life of municipal landfills and help maintain the municipal cost controls quoted by NUERA for a longer period. Using Promontory could also keep municipal landfills open for as long as possible and could provide a convenient option for self-haul customers and the continuation of other services (such as recycling, composting, and waste management education).

4.2.2 Recoverable Energy and Resources

UT Rev. Stat. § 19-6-108 (10) (b) (ii)

The energy and resources recoverable by the proposed facility …

Promontory is installing a solar microgrid and will use the renewable power to avoid the need to purchase electricity for day-to-day operations.[45]

Promontory will install a landfill gas collection system when landfill gas emission rates exceed regulatory limits. The landfill gas can be used directly to generate electricity, or it can be cleaned, compressed, and used as fuel for mobile equipment. When adequate gas is generated, Promontory can clean and compress landfill gas and displace the use of diesel fuel and its dirtier emissions.

[45] Back-up propane generators will be installed for emergency operations.

4.2.3 Waste Reduction and Better Waste Management Methods

UT Rev. Stat. § 19-6-108 (10) (b) (iii)

The reduction of nonhazardous solid or hazardous waste management methods, which are less suitable for the environment, that would be made possible by the proposed facility …

Waste reduction is based on state or local waste management policies, not by disposal location. Promontory Point Landfill, however, does not exclude any options, and there will always be post-processing residuals that will require land disposal.

For the communities that will use Promontory Point Landfill, incorporating a transfer station(s) creates a consolidation point and provides opportunities to segregate materials and to divert organics, recyclables, or other inert materials before the waste goes to the landfill. While no new or emerging waste technologies that make claims of reducing environmental impacts have yet proven to be commercially viable, Promontory's management is well-versed in various recovery methods and conversion technologies. For now, landfilling is a cost-effective and environmentally sound option, but Promontory is committed to pursuing the highest and best use of materials.

Promontory believes in appropriate resource utilization, recycling, and reuse to preserve our natural resources. Promontory is willing to partner with municipalities and facilitate discussions about the feasibility of diverting and recovering organics, recyclables, and other inert and reusable materials at the landfill. Given the size of the property, its remote location, and its proximity to rail, the Promontory site might be suitable for diverting materials and making them available for reuse. For example, if trains arrive from California or other western U.S. ports, returning trains could back-haul recyclables for distribution to the global market.

Section 5.1 (Environmental Considerations) and Section 2.3.2 (Standards for Performance, Design, and Operations) of this report provide additional details on the environmental suitability of Promontory Point Landfill. In summary, the site meets all siting and all the location standards. Promontory will construct a solar microgrid to power the electrical equipment and lighting to make the landfill as self sufficient as possible. Promontory Point Landfill has been built with a composite liner and leachate collection and removal system, as well as a groundwater monitoring system to measure liner and leachate management performance. Although it is not a requirement, a fugitive dust control plan was included in the Class V Permit, and this plan is part of the operations to address ambient air quality standards at the property boundary.

For many northern Utah communities, because of expected traffic conditions in south Davis, Salt Lake, and Utah Counties, customers could experience a decreased travel time to haul waste north to Promontory Point Landfill compared to other landfills. The decreased travel times have air quality benefits. Trucks traveling in highly congested traffic conditions are expected to emit more pollutants given both their higher emission rates at lower speeds and their longer engine run times.

With Promontory's infrastructure investment, some communities and some pending special remediation project managers (prison relocation and airport expansion) could decide to rail-haul waste to Promontory Point Landfill. Certain existing facilities in the greater Salt Lake area might be able to be equipped to load waste into rail cars. Rail hauling in-state waste would reduce truck traffic, reduce fuel consumption, and reduce

air pollutant emissions. On average, rail transportation is 4 times more efficient than trucking.[46] With the majority of waste generated along the Wasatch Front communities, all of which are $PM_{2.5}$[47] nonattainment areas, alternative transportation should be considered.

From Promontory's customers' perspective, transporting waste by rail has potential benefits from the standpoints of sustainability and carbon impacts (greenhouse gases or GHG) reduction, which most large industrial businesses track for purposes of managing their carbon output and reporting to their stakeholders. As of November 2017, over 1,300 businesses have voluntarily adopted GHG reduction targets in the 2015 Paris Agreement.[48] In addition to electronic waste tracking, Promontory's state-of-the-art industrial waste tracking technology platform will facilitate real-time reporting for these customers who are committed to track, report, and reduce their company-wide GHG emissions.

As mentioned in the *Needs Assessment Report*, most heavy process manufacturing and industrial service facilities are rail-served, so rail-hauling waste provides a cost-effective alternative for transporting waste long distances. Given that large concentrations of industrial facilities are located throughout the western United States, Promontory Point Landfill is strategically located to provide disposal solutions to these industries due to its proximity to UP's main line.

4.2.4 Hazardous Waste Management

Not applicable. Promontory Point Landfill will take only nonhazardous waste.

UT Rev. Stat. § 19-6-108 (10) (b) (iv)

Whether any other available site or method for the management of hazardous waste would be less detrimental to the public health or safety or to the quality of the environment …

[46] *Freight Railroads Help Reduce Greenhouse Gas Emissions*, Association of American Railroads, April 2017, https://www.aar.org/BackgroundPapers/Railroads%20and%20Greenhouse%20Gas%20Emissions.pdf

[47] $PM_{2.5}$ is particulate matter less than 2.5 microns in diameter.

[48] "America's Pledge Phase 1 Report: States Cities, and Businesses in the United States are Stepping Up on Climate Action," https://www.americaspledgeonclimate.com, November 2017

4.3 Compliance History of Owners and Operators

Promontory's leadership and operations support staff have well over 100 years of solid waste management experience. In their previous work experience, they have not received notice of any major violations. For minor infractions, all regulatory issues were addressed to the satisfaction of the appropriate agency.

The following sections provide brief bios for Promontory's leadership and operations management team. Résumés can be provided on request.

UT Rev. Stat. § 19-6-108 (10) (c)

The compliance history of an owner or operator of a proposed commercial nonhazardous solid or hazardous waste treatment, storage, or disposal facility, which may be applied by the director in a nonhazardous solid or hazardous waste operation plan decision, including any plan conditions …

Jon Angin, CEO

Mr. Angin has more than 30 years of management and project experience in the solid waste and recycling industry. Mr. Angin has overseen the operations, maintenance, finance, and environmental compliance of solid waste management systems and facilities. This has included solid waste processing, transfer, and disposal assets such as hauling operations, transfer stations, intermodal facilities, recycling centers, buyback centers, material recovery facilities, landfills, vehicle and container maintenance operations, call centers and payment processing operations. Mr. Angin is the former Northwest Region Vice President for a large waste management company where he was responsible for all of the company's operations and compliance in Oregon, Washington, Idaho, and Alaska, as well as two specialized landfills in California. He also held senior management positions with an engineering consulting firm and a waste conversion technology company. During his career in the waste industry, he has led numerous strategy development initiatives, integrated energy technology, and large capital infrastructure projects.

Kevin Iler, VP of Operations

Kevin has more than 30 years of operational experience in the solid waste, hazardous waste, and environmental remediation industries across North America and Europe. In his various roles, Kevin has managed numerous high-volume waste-disposal facilities in Chicago, the San Francisco Bay Area, and Birmingham, England. He directed the operating transition of 16 landfill and 10 quarry businesses from a British company to an American company throughout England over a 3-year period. This experience and expertise has allowed Kevin the opportunity to work with many environmental regulators and community leaders, adjacent to major waste-disposal facilities, to develop positive outcomes for all stakeholders.

Kevin has held positions of increasing responsibility for managing multimillion-dollar waste-disposal assets for publicly and privately owned entities creating excellent results. Most recently, he was responsible for managing one of the largest landfill gas-to-energy production facilities in California, which facility generated up to 12 megawatts of continuous electrical power. Throughout his career, Kevin has combined environmental stewardship with sound business acumen to produce strong financial performance.

Will Spears, VP of Finance

Will Spears has 30 years of waste management and recycling industry experience, including 23 years in financial leadership roles and 7 years in operational leadership roles for an industry-leading company. He also has over 25 years of experience working with, and the assessing financial viability of, both existing and proposed waste-by-rail operations.

He most recently completed 8 years as a financial leader for seven landfills and related transfer stations in the Pacific Northwest and Alaska. Prior to that, he spent 5 years managing a regional rail–served landfill in Oregon. Ranked in the top 10 largest landfill operations in the United States, this facility includes both solid and hazardous waste services, managing over 2.5 million tons of material each year.

Rick Martin, VP of Sales and Marketing

Rick is responsible for the development and leadership of all sales, marketing, customer service, and IT platform (website and operating systems) activities at Promontory Point Landfill. Rick has over 30 years of experience in the environmental and energy sectors. Beginning at Waste Management International, Hong Kong, Rick was personally responsible for the development of the waste identification (profile), tracking (manifesting), and customer communication process for the project. At EnviroChem, Rick was responsible for all site activities including operation of the fully permitted (hazardous waste) 10-day transfer and consolidation facility. Rick was challenged with turning around a poorly operated and unprofitable facility in Apex, North Carolina.

Rick was responsible for all operations, maintenance, and sales activities for five operating branches located in Michigan and northwest Ohio. He was responsible for operational efficiency, regulatory compliance, safety compliance, billing operations, and sales leadership for a staff of more than 200 employees. During his tenure at each facility, all regulatory issues were addressed and remedied to the satisfaction of the appropriate agency.

Ann Garner, Director of Technical Services

Ann has over 26 years of experience in the environmental and waste industry, focusing on advising clients and employers regarding environmental permitting, compliance, and waste management needs. Her expertise comes from experience working for an industry leader in environmental services and several environmental engineering companies. Most recently Ann was responsible for the creation, development, and leadership of a National Technical Service Center, which provides client-focused technical and customer support for national industrial clients.

Her expertise also encompasses managing large industrial site investigations and remediation projects, compliance and permitting for various industries, and development of waste analysis plans. She also has experience in business development and consulting for the geology section of a state department of environmental management. Ann has led both local and remote teams of geologists, scientists, and professionals who conducted investigations and advised clients based on the regulations and the client's specific business needs.

Michael B Giancola, Business Advisor

Michael has more than 32 years of high-level operational, administrative, and executive experience in the public sector including over 25 years in the solid waste industry. In his experience as an executive officer, he directed the administration and operation of an entire county organization. The organization had a $6.3-billion annual budget, consisted of over 18,000 employees, and had 24 departments. Michael reported to a five-member elected board who, with Michael's input, set public policy and identified short- and long-term strategic operational and financial goals.

As a former director of public solid waste department, Michael was responsible for the oversight of three active landfills, which together managed 14,000 tons of daily trash. These landfills are partnered in the development of two landfill gas-to-energy projects.

5 Additional Determinations

Utah Revised Statute § 19-6-108 (11) points the director to evaluate the environmental effects of the project and how Promontory Point Landfill will serve industry of the state. The applicable citation is provided below.

> (11) The director may not approve a commercial nonhazardous solid or hazardous waste facility operation plan unless director determines that: (a) the probable beneficial environmental effect of the facility to the state outweighs the probable adverse environmental effect; and (b) there is a need for the facility to serve industry within the state.

5.1 Environmental Considerations

UT Rev. Stat. § 19-6-108 (11) (a)

The probable beneficial environmental effect of the facility to the state outweighs the probable adverse environmental effects …

Modern landfilling is an environmentally sound waste management practice. Promontory is committed to protecting and enhancing the environment. The due diligence for landfill siting and purchase and the environmental surveys performed for the Class I Permit Application indicate that Promontory Point Landfill is in a location suitable for landfill development. The site meets all siting and all the location standards in R315-302-1 for Class I and Class V landfills. Promontory does not envision any materially different environmental effects with the Class V permit. In addition, Promontory has an approved Plan of Operations which defines the ongoing monitoring and the procedures used to observe the performance of the landfill's environmental protection measures. In addition to R315 standards, and as part of the conditional-use permit with Box Elder County, Promontory has committed to improve the roadway over time and control dust on the access road and inside the site.

The following sections briefly summarize the location, engineering, and operating standards designed to protect human health and the environment. Also refer to Part II (Application Checklist) of Promontory's March 2017 Class V Permit Application for direction regarding where to find details about environmental protection measures.

5.1.1 Location Standards

A detailed description of compliance with location standards is provided in Section I.c of the Class V Landfill Permit Application (March 2017). The following list summarizes the major conclusions:

- No cultural or historic resources will be impacted (refer to Appendix E of the Permit Application).
- No residences, parks, monuments, recreation areas, or wilderness areas are within 1,000 feet of the site boundary (refer to Section 1.c.3 of the Permit Application).
- No ecologically or scientifically significant areas or threatened or endangered species habitats are present in the site area (refer to Appendix F of the Permit Application).
- No sole-source aquifers or other public drinking water sources are near the site.
- No floodplains, wetlands, or other waters of the United States are located at the site.
- No prime or unique farmlands are found on the site.

In addition to near-surface conditions, the landfill's geologic and hydrogeological setting is appropriate for developing a landfill because there are no major geologic hazards (active faults or subsidence areas) and the principal aquifer is not used for domestic purposes. The landfill is located over 3,000 feet from the Great Salt Lake and is about 200 feet higher in elevation. The lowest part of the landfill liner will be 50 feet above groundwater levels.

Promontory Point Landfill has and will continue to disturb the natural condition of the site. However, the Utah legislature has delegated responsibility for land-use planning and regulation to the state's Counties[49] and Cities. As mentioned in Section 2.4.1 (Box Elder County Support), the Box Elder County Commission approved Ordinance 422 modifying the zoning to allow Promontory Point Landfill as a Class V facility. Therefore, the County has determined that there are no zoning restrictions and believes that the land disturbances at the site are acceptable. The minor land-use impacts would be offset with the following integrated features, planned actions, and other potentially feasible and environmentally beneficial activities:

- By using solar panels, Promontory Point Landfill will be powered by a 100% renewable source of energy.
- Promontory will install a gas-collection system and, when landfill gas volumes are adequate, will collect, clean, and use the landfill gas as a transportation fuel.
- The operating plan for Box Elder County's conditional use permit includes a fugitive-dust-control plan for minimizing dust on access roads and to help prevent dust from leaving the site.

[49] Utah Code Title 17 (Counties), Chapter 27a (County Land Use, Development, and Management Act)

- Engineering controls include a composite liner, a leachate collection system, and groundwater monitoring wells to check the environmental performance of these features.
- Promontory has cleaned up illegal dumps at the site and will removal topsoil that might contain lead contamination from lead bullets and shot.
- Promontory Point Landfill's large size will reduce the need for other future landfills and the potential land-use conflicts they might introduce.
- Promontory is willing to partner with municipalities and facilitate discussions about the feasibility of diverting and recovering organics, recyclables, and other inert and reusable materials at the landfill.
- Given the size of the property, its remote location, and its proximity to rail, the Promontory site might be suitable for diverting inert materials and making them available for reuse.
- Compared to other existing landfills, the route for transporting waste from some communities to Promontory Point Landfill would be on less-congested freeways. The resulting decreased travel time will have benefits in terms of reduced emissions and improved air quality. If Utah communities determine that rail hauling is feasible, there would be additional emission reduction and air quality benefits from rail transportation.

Promontory Point Landfill does not have any significant adverse environmental impacts and will not have any materially different impacts with a Class V permit. Promontory can potentially add natural resource enhancements (plant native vegetation or wetland enhancements for example) on its non-operational areas. During the public comment period for the Class V Permit Application, Promontory will work with interested resource agencies and DWMRC to offset any currently unforeseen direct environmental impacts in accordance with environmental laws and regulations.

5.1.2 Design Standards

The March 2017 Class V Permit Application includes all of the engineering features that Promontory will construction to comply with the performance standards of R315-303-2 and other related solid waste rules. The environmental protection features include composite liners, leachate collection systems, groundwater monitoring, explosive gas monitoring, litter controls, and stormwater run-on or run-off controls, to name a few.

5.1.3 Plan of Operations

The Plan of Operations for the Class V Permit Application includes, but is not limited to, waste handling procedures, plans for litter control, environmental monitoring, and corrective actions. The Plan of Operations for the Class V Permit Application is essentially the same as the Plan of Operations approved by DWMRC and integrated in the Class I Permit. In March 2017, Promontory Point Landfill's mitigation agreement was reviewed and approved by Box Elder County. The mitigation agreement provided the County with details from the Plan of Operations regarding its contingency plans for fire, groundwater contamination, surface water runoff, landfill gas controls, fugitive dust, litter

control, procedures for rejecting hazardous waste, and other related landfill operating procedures.

5.2 Need to Serve Industry within the State

Waste management is an integral part of industry in Utah. There is no shortage of waste in northern Utah now (between 1,981,247 and 2,677,360 tons), and there will be even more in the future as waste grows exponentially to a projected annual tonnage of between 3,227,000 and 4,361,000 tons per year in 2050 and between 3,721,000 and 5,029,000 tons per year by 2065. In the seven northern Utah counties, annual waste volumes are expected to grow by 63% by 2050 and 88% by 2065.[50] A portion of this waste is generated by industry in Utah.

The University of Utah's Kem C. Gardner Policy Institute projected that the administrative and waste services sector will need to grow 188.7% in order to manage future waste generated by Utah's fast-growing population. This represents the third-fastest-growing sector behind construction and professional and technical services.

UT Rev. Stat. § 19-6-108 (11) (b)

There is a need for the facility to serve industry within the state.

5.2.1 Industry within Box Elder County

For Box Elder County, Promontory Point Landfill is an economic driver and will support future economic development in accordance with Governor Gary Herbert's rural jobs initiative. The Gardner Policy institute calculated that Promontory Point Landfill would support a 15-year average of 185 new jobs in Box Elder County. By 2031, a total of 323 direct, indirect, and induced jobs would be supported by Promontory Point Landfill's operation. The economic and fiscal monetary benefits are substantial due to the direct, indirect, and induced effects of Promontory Point Landfill.

For Box Elder County, the net revenues attributable to Promontory Point Landfill were modeled to be about $2.3 million annually, with a 15-year net present value of $31.0 million. Because of these substantial benefits, the Box Elder County Commission and the Utah Private Activity Bond Review Board approved the issue of private activity bonds to jump-start the development of Promontory Point Landfill and its supporting local industries.

Box Elder County is attractive to new industrial and manufacturing businesses because of its inexpensive land values, the demographics of its work force, and its proximity to existing transportation infrastructure. Box Elder County also recognized the need to develop a long-term waste-disposal infrastructure in order to help attract new industry, including heavy industrial and manufacturing businesses, to the area. However, the capital investment for Box Elder County to build a modern landfill that could offer indemnification protection to new industries is prohibitive and politically challenging. Therefore, they are looking to Promontory to be their partner.

[50] Annual waste generation range is defined by using 4.4 and 6.0 pounds per person per day.

5.2.2 Industry within the State

For other areas of northern Utah, large, municipally-owned landfills could have as little as 21 to 29 years of life. Using Promontory Point Landfill would help ensure that Intermountain Regional and Republic (Wasatch Regional) do not form a duopoly, which could drive disposal prices higher. As mentioned previously, NUERA states that "in the past, when municipally owned landfills have been closed and replaced by only one or two privately owned landfills, tipping fees have soared." The ability to keep municipal landfill options available for a longer time and to have Promontory as an additional private landfill competition within the private sector will increase and keep future waste-disposal rates low, which is good for Utah industry.

For Promontory Point Landfill's most likely wasteshed (Weber and Davis Counties), waste trucking costs are projected to be 16% higher when hauling waste south on congested I-15 compared to going northbound. This equates to an additional cost of about $2 million annually by 2050 (assuming 2050 waste volumes from Weber and Davis Counties). Other private industries in these northern Utah counties can expect a similar level of cost inefficiencies because of the greater levels of congestion on interstates through Salt Lake, south Davis, and Utah Counties.

Construction is projected to be the fastest-growing industry in Utah, increasing 365.5% by 2065. C&D waste is currently about 30% of total landfilled waste. While not specifically analyzed in this *Needs Assessment Report Addendum*, future C&D waste will also need land disposal. The capacity of existing C&D landfills and the future landfill capacity needed was not specifically quantified by Promontory. However, these volumes are not insignificant now, and they are expected to grow substantially. C&D waste disposal will require new land disposal areas, which would displace other land uses. Promontory Point Landfill also provides C&D waste disposal but with less land-use conflicts. In addition, as forecasted by the Gardner Policy Institute, administrative and waste services need to grow by 188.7% by 2065 to keep up with the disposal demand. Therefore, Promontory Point Landfill is a critical and integral component of industry in Utah.

The economic activity produced by Promontory's new landfill will support a 15-year average of up to 375 total new jobs in the state. By 2031, up to 614 new jobs will be supported. This number is the sum of direct, indirect, and induced employment effects. In other words, Promontory will purchase goods from local industry, who will in turn purchase inputs from other local industries. The State will also benefit fiscally; new state net revenues will average $0.92 million each year, with a 15-year net present value of $12.5 million. To date, Promontory has hired a contractor who has delivered over $8,000,000 in work with its local employees.

6 Conclusion

Annual waste volumes will grow substantially as Utah's population continues to expand. The need for a Class V designation for Promontory Point Landfill is based on the market and economic assessment, which shows strong benefits from a regional facility. Box Elder County wants to offer businesses lower disposal costs provided by the economies of scale offered by larger landfill operations, similar to other municipalities in other parts of the state. Box Elder County also sees an opportunity to attract industrial and manufacturing businesses by developing low-cost and long-term -disposal infrastructure for waste generated by these businesses. Promontory Point Landfill's Class V designation is supported by Box Elder County, which sees substantial economic and fiscal benefits. Because of the lack of environmental effects and limited land-use conflicts, Box Elder County has changed its zoning to allow the use of the land for a Class V landfill. Promontory Point Landfill is a critical and integral component of industry in Utah, which needs to increase its administrative and waste services employment by 188.7% to keep up with waste-disposal demand.

All local and legislative approvals are in place. With DWMRC's approval of Promontory Point Landfill's operating plan and Class V Landfill Permit Application, and Governor Gary Herbert's approval, Box Elder County and the existing and future industries in the state can start to recognize the benefits of Promontory Point Landfill.

Appendix A

Gardner Policy Institute,

Economic and Fiscal Impacts of Promontory Point Landfill

Technical Memo

Kem C. Gardner
POLICY INSTITUTE
THE UNIVERSITY OF UTAH

To: Mitch Zundel, Director
Box Elder County Economic Development
From: John C. Downen, Senior Research Analyst
Juliette Tennert, Director of Economic and Public Policy Research
Date: November 18, 2016
Subject: Economic and fiscal impacts associated with Promontory Point Resources' new solid waste facility, 2017–2031

We are pleased to respond to your request for an analysis of the Promontory Point Resources new solid waste facility in Box Elder County. Table 1 summarizes the results. Our analysis is based on input data provided by Promontory Point Resources (PPR); the validity of the results is dependent upon the accuracy of these inputs. This analysis does not consider the effects of any state or local incentives.

Table 1: Promontory Point Resources Summary Local Impacts
(Millions of constant 2016 dollars)

Impact	Annual Average
Total Employment	185
Direct[1]	158/101
Indirect & Induced	84
Total Personal Income	$11.5
	NPV[2]
Net New Local Revenues	$31.0
Net New State Revenues	$12.5

1. The higher number is the annual average of the jobs projected by PPR for 2017 through 2031. The lower number is the "exogenous" portion of these jobs, attributable to out-of-state revenues.
2 Net present value calculated at a 1.1% discount rate.
Note: Results do not include the effects of state or local incentives.
Source: Kem C. Gardner Policy Institute analysis of PPR data using the REMI PI+ model and Gardner Policy Institute fiscal model

The remainder of this memo provides an overview of the methodology, the economic context relative to PPR, and further detailed results. All dollar amounts are in inflation-adjusted 2016 dollars.

Methodology and Model

Economic impacts are generated when "new" or outside money is spent in a region. Because PPR expects to earn revenues from both in-state and out-of-state sources, the Gardner Policy Institute adjusted the firm's employment, compensation and expenditures by the out-of-state share of revenues. The Gardner Policy Institute then used the REMI PI+ model to estimate the economic and demographic impacts of PPR's new solid waste facility in Box Elder County. REMI is a dynamic model that incorporates input-output, economic geography, econometric and general equilibrium components. In this analysis the jobs and compensation at PPR, plus capital, operations and maintenance expenditures, are

the direct effects. This increased economic activity spurs purchases from local suppliers, who may in turn purchase inputs from other local suppliers. These rounds of activity produce the indirect employment and income effects. Finally, the direct and indirect employees spend some of their new wages in the local economy, creating induced employment and income. This overall increase in economic activity attracts new workers to the state, some of whom will bring their school- and college-aged children with them.

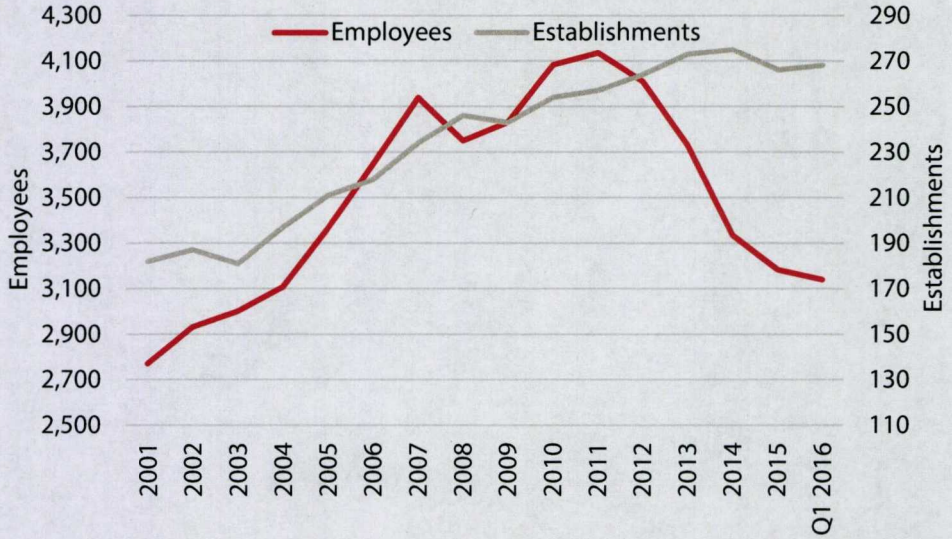
On the fiscal side, the increased economic activity produces new income, sales and property tax revenues, while the growing population creates additional government expenditures. The Gardner Policy Institute estimates fiscal impacts based on multi-year historical relationships between personal income, industry output and tax revenues on the one hand, and expenditures per capita for the relevant populations (school age, college age and total population) on the other.

Context

Promontory Point Resources is classified in NAICS industry 562, Waste Management and Remediation Services. As of the first quarter of 2016 the Utah Department of Workforce Services categorizes 268 establishments in this sector statewide. Of these, 243 are private companies, 24 are local government entities, and one is federal. The largest establishments are Ace Disposal, Allied Waste Services of Northern Utah, BFI, Clean Harbors Aragonite, EnergySolutions, EnviroCare, and Waste Management of Utah, each with 100 to 249 employees. There are three establishments in Box Elder County—one private, Hillside Recycling with 14 employees, and two county entities, the Box Elder County Landfill and Brigham Refuse Collection. Total employment in the sector averaged 3,141 statewide and 27 in Box Elder. The average establishment size for NAICS 562 in Utah was 11.7 employees.

Covered employment in Utah's Waste Management and Remediation Services sector rose 49 percent from 2,771 jobs in 2001 to a peak of 4,137 in 2011 (see Figure 1).[1] Over this period there was only a modest decline from 2007 to 2008, at the onset of the recession. However, since 2011 sector employment has fallen by 24 percent to 3,141 in Q1 2016. NAICS 562 represents only 0.22 percent of Utah's total covered employment; this is about three-quarters of the industry's share of national employment (location quotient of 0.77). The number of waste management and remediation establishments in Utah rose from 182 in 2001 to 275 in 2014, then dipped to about 267 in 2015 and the first quarter of 2016.

Figure 1: NAICS 562 Employment and Establishments in Utah, 2001–Q1 2016



Source: Bureau of Labor Statistics, Quarterly Census of Employment and Wages and Utah Department of Workforce Services

Analysis

The Gardner Policy Institute analyzed the impacts of the construction and operation of a new solid waste facility in Box Elder County. The results are based on annual employment; compensation; capital, operations, and maintenance expenditures; state income taxes; property taxes; and other local tax data provided by Promontory Point Resources. As such, the validity of the results depends on the accuracy of the inputs. The Gardner Policy Institute did not consider the potential intangible impacts to reputation or community perceptions of a large solid waste facility in the county.

Direct Effects

Table 2 presents the annual direct employment, compensation[2] and expenditures provided by PPR for the 2017–2031 period. Employment is projected to grow slowly from 2017 through 2020, increasing from 36 to 50, but from 2021 through 2031 PPR expects to add 25 jobs annually. Total compensation, measured in constant 2016 dollars, grows from almost $2.3 million in 2017 to $29.9 million in 2031. In-state non-payroll expenditures average about $18.5 million annually between 2017 and 2031, with initial expenditures of $25.0 million in 2017. Expenditures consist of construction of landfill cells (initial and ongoing), construction and maintenance of a rail spur and truck facilities, operations and maintenance for rail car and truck loading and unloading, and general operating expenditures. PPR projects state corporate income tax payments to grow from $41,900 in 2017 to $808,800 in 2031. Total local taxes paid increase from $906,000 to $2.2 million over the same period.

Table 2: Promontory Point Resources Solid Waste Facility Summary Data, 2017–2031
(Thousands of constant 2016 dollars)

	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
New Jobs	36	38	41	50	75	100	125	150	175	200	225	250	275	300	325
Total New Compensation	$2,275.3	$3,655.8	$3,773.8	$4,602.1	$6,903.2	$9,204.3	$11,505.3	$13,806.4	$16,107.5	$18,408.5	$20,709.6	$23,010.7	$25,311.7	$27,612.8	$29,913.9
Average Compensation (dollars)	$63,204	$96,206	$92,043	$92,043	$92,043	$92,043	$92,043	$92,043	$92,043	$92,043	$92,043	$92,043	$92,043	$92,043	$92,043
In-State Expenditures	**$25,021.2**	**$13,873.8**	**$14,791.0**	**$18,278.6**	**$16,363.9**	**$18,519.9**	**$16,617.8**	**$18,996.9**	**$17,250.8**	**$19,692.3**	**$18,004.6**	**$20,446.6**	**$18,760.2**	**$21,255.4**	**$19,551.7**
CapEx for Landfill Cells	$5,716.2	$2,786.8		$2,090.1		$2,090.1		$2,090.1		$2,090.1		$2,090.1		$2,090.1	
CapEx for Rail Spur + Future Maintenance	$9,255.6	$185.1	$185.1	$185.1	$185.1	$185.1	$185.1	$185.1	$185.1	$185.1	$185.1	$185.1	$185.1	$185.1	$185.1
CapEx for Truck Facilities + Future Maintenance	$7,200.0	$144.0	$144.0	$144.0	$144.0	$144.0	$144.0	$144.0	$144.0	$144.0	$144.0	$144.0	$144.0	$144.0	$144.0
Operating Expenditures	$458.3	$7,086.9	$10,369.8	$11,685.4	$11,777.4	$11,758.2	$11,859.3	$12,059.7	$12,313.3	$12,572.6	$12,881.0	$13,137.0	$13,442.8	$13,748.2	$14,032.8
O&M for Rail Car Loading/ Unloading on Site	$2,047.7	$2,566.7	$2,312.9	$2,359.2	$2,406.4	$2,454.5	$2,503.6	$2,553.7	$2,604.7	$2,656.8	$2,710.0	$2,764.2	$2,819.5	$2,875.8	$2,933.4
O&M for Truck Loading/ Unloading on Site	$343.4	$1,104.3	$1,779.2	$1,814.8	$1,851.1	$1,888.1	$1,925.8	$1,964.4	$2,003.6	$2,043.7	$2,084.6	$2,126.3	$2,168.8	$2,212.2	$2,256.4
Gross Revenue	**$5,136.0**	**$31,090.7**	**$37,979.9**	**$41,105.9**	**$41,928.1**	**$42,766.6**	**$43,621.9**	**$44,494.4**	**$45,384.3**	**$46,292.0**	**$47,217.8**	**$48,162.2**	**$49,125.4**	**$50,107.9**	**$51,110.1**
In-State	$2,436.0	$8,806.7	$12,190.3	$14,800.5	$15,096.5	$15,398.4	$15,706.4	$16,020.5	$16,340.9	$16,667.7	$17,001.1	$17,341.1	$17,687.9	$18,041.7	$18,402.5
Out-of-State	$2,700.0	$22,284.0	$25,789.7	$26,305.5	$26,831.6	$27,368.2	$27,915.6	$28,473.9	$29,043.4	$29,624.2	$30,216.7	$30,821.1	$31,437.5	$32,066.2	$32,707.6
share	52.6%	71.7%	67.9%	64.0%	64.0%	64.0%	64.0%	64.0%	64.0%	64.0%	64.0%	64.0%	64.0%	64.0%	64.0%
Taxes															
State Corporate Income Tax	$41.9	$372.8	$600.1	$621.1	$648.2	$669.8	$686.9	$702.0	$717.3	$730.7	$747.3	$762.0	$777.4	$794.3	$808.8
Property Tax	$300.0	$300.0	$300.0	$300.0	$300.0	$300.0	$300.0	$300.0	$300.0	$300.0	$300.0	$300.0	$300.0	$300.0	$300.0
Other Local Taxes	$606.0	$1,332.0	$1,920.0	$1,920.0	$1,920.0	$1,920.0	$1,920.0	$1,920.0	$1,920.0	$1,920.0	$1,920.0	$1,920.0	$1,920.0	$1,920.0	$1,920.0
Total Local Taxes	$906.0	$1,632.0	$2,220.0	$2,220.0	$2,220.0	$2,220.0	$2,220.0	$2,220.0	$2,220.0	$2,220.0	$2,220.0	$2,220.0	$2,220.0	$2,220.0	$2,220.0

Source: Promontory Point Resources.

Economic and Demographic Impacts

The total employment impacts of PPR's new solid waste facility, measured in full- and part-time jobs counted equally, average 185 annual jobs in Box Elder County from 2017 through 2031 (see Table 3 and Figure 2). Indirect and induced employment impacts, which omit the jobs at PPR itself, average 84 jobs annually in Box Elder, plus an additional annual average of 190 jobs in the rest of the state. Personal income is estimated to average $11.5 million higher in the county each year from 2017 through 2031 than it would have been without the project, and $15.5 million higher in the rest of the state. Box Elder is projected to gain 177 new residents by 2031, of whom 38 are school age and 35 are college age. The rest of the state will see 480 new residents, including 102 school aged and 92 college aged.

Table 3: Promontory Point Resources Summary Economic and Demographic Impacts, 2017–2031

Impact	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	Average
Box Elder County																
Total Employment[1]	128	83	72	88	101	133	147	180	193	225	238	268	281	310	323	185
Direct[2]	19	27	28	32	48	64	80	96	112	128	144	160	176	192	208	101
Indirect & Induced	109	55	45	56	53	69	67	84	81	97	94	108	105	118	115	84
Personal Income (millions of 2016 $)	$5.1	$4.2	$3.9	$4.7	$5.7	$7.6	$8.8	$10.8	$12.0	$14.1	$15.4	$17.5	$18.8	$21.0	$22.3	$11.5
Total Population	25	31	35	42	47	56	63	74	85	98	111	127	142	160	177	
School Age (5–17 years old)	4	5	6	7	8	10	12	14	17	20	23	26	30	34	38	
College Age (18–29 years old)	8	10	10	11	12	14	15	17	18	21	23	26	28	32	35	
Rest of State																
Indirect & Induced Employment[1]	93	107	114	128	138	160	171	193	203	223	233	252	261	280	290	190
Personal Income (millions of 2016 $)	$5.5	$6.4	$7.1	$8.4	$9.5	$11.6	$13.0	$15.1	$16.6	$18.8	$20.3	$22.5	$24.1	$26.4	$27.8	$15.5
Total Population	32	57	80	104	129	158	189	223	256	293	329	367	404	443	480	
School Age (5–17 years old)	5	10	14	18	23	29	35	42	49	57	65	74	83	93	102	
College Age (18–29 years old)	11	18	24	30	36	43	49	55	61	67	72	77	82	87	92	
Statewide Total																
Total Employment[1]	222	190	187	216	239	293	318	373	396	448	471	521	542	591	614	375
Direct[2]	19	27	28	32	48	64	80	96	112	128	144	160	176	192	208	101
Indirect & Induced	203	162	159	184	191	229	238	277	284	320	327	361	366	399	406	274
Personal Income (millions of 2016 $)	$10.6	$10.6	$11.0	$13.1	$15.3	$19.2	$21.7	$25.9	$28.6	$32.9	$35.7	$40.0	$42.9	$47.4	$50.2	$27.0
Total Population	56	88	114	145	175	214	252	297	341	391	439	494	546	603	657	
School Age (5–17 years old)	10	15	20	25	31	39	47	56	66	77	88	101	113	127	141	
College Age (18–29 years old)	19	28	35	42	48	56	63	72	79	87	94	103	110	119	126	

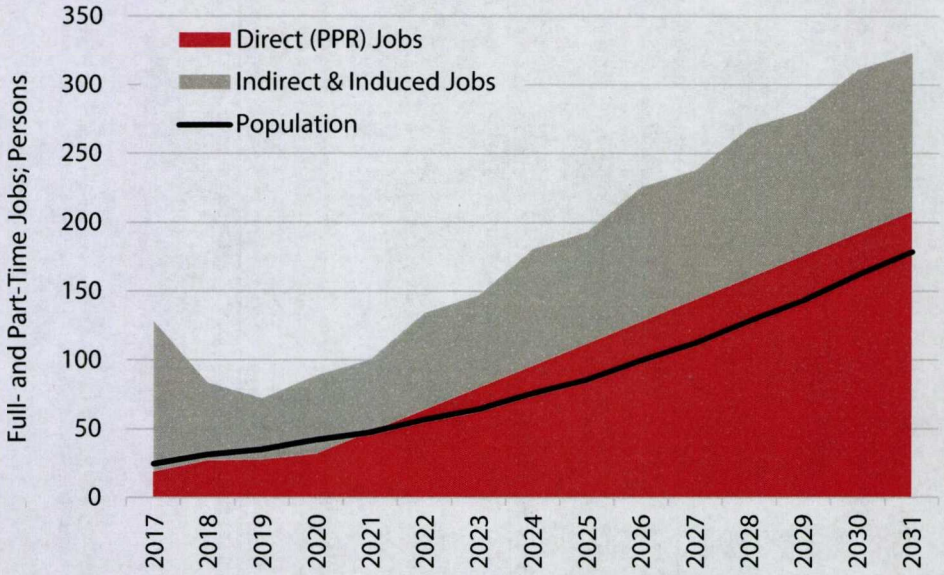
Note: Impacts were calculated based on the "exogenous" portion of PPR's employment, compensation and expenditures; that is, total direct employment, compensation and expenditures multiplied by the out-of-state share of gross revenues. Employment and personal income impacts are for the given year only; population impacts accumulate over time.

1. Employment is measured as full- and part-time jobs, counted equally.

2. Total employment at Promontory Point waste management facility multiplied by the out-of-state share of revenues.

Source: Kem C. Gardner Policy Institute analysis of PPR data using the REMI PI+ model

Figure 2: PPR Solid Waste Facility Employment and Population Impacts in Box Elder County, 2017–2031



Note: The direct jobs count only those attributable to out-of-state revenues.
Source: Kem C. Gardner Policy Institute using the REMI PI+ model

Fiscal Impacts

The Gardner Policy Institute estimated the new state and local revenues and expenditures from employment, personal income, output, and population impacts produced by the REMI PI+ model. State revenues consist of estimated personal and corporate income taxes and state sales and gross receipts taxes. State expenditures comprise non-education expenditures, state public education expenditures, and higher education expenditures. Local revenues consist of county sales taxes and property taxes. Estimated local expenditures comprise general county expenditures and countywide public education expenditures.

New revenues exceed new expenditures in every year of the analysis for both Box Elder County and the State of Utah. New county revenues average $2.3 million annually, with a net present value of $32.0 million.[3] These revenues are driven largely by direct local tax payments projected by PPR, consisting of property taxes ($300,000 per year) and "other local taxes" ($1.9 million per year after 2018). New county expenditures average $77,900 each year, with a net present value of just over $1.0 million. Average annual *net* revenues are almost $2.3 million, with a net present value of $31.0 million (see Table 4 and Figures 3 and 4). New state revenues average almost $2.2 million annually, while new expenditures average $1.3 million. State net revenues average $915,600 each year, with a net present value of $12.5 million.

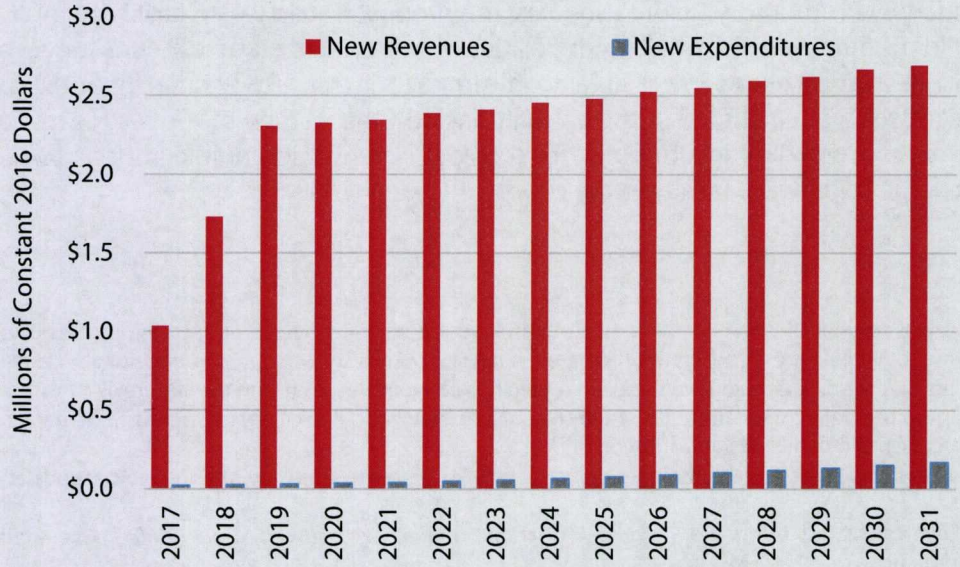
Table 4: Promontory Point Estimated Fiscal Impacts for the State of Utah and Box Elder County, 2017–2031
(Thousands of constant 2016 dollars)

Impact	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	NPV[6]
State Fiscal Impacts																
Personal Income Tax Revenues[1]	$282.5	$284.7	$293.6	$349.5	$409.4	$514.1	$582.0	$694.2	$766.2	$880.2	$954.7	$1,071.2	$1,148.3	$1,268.3	$1,342.7	
Direct Corporate Income Tax[2]	$41.9	$372.8	$600.1	$621.1	$648.2	$669.8	$686.9	$702.0	$717.3	$730.7	$747.3	$762.0	$777.4	$794.3	$808.8	
Additional Corporate Income Tax Revenues[3]	$21.8	$22.6	$23.6	$26.9	$28.9	$34.2	$36.5	$42.3	$44.6	$50.2	$52.4	$58.0	$60.2	$65.8	$68.0	
State Sales Tax Revenues[4]	$303.1	$305.5	$315.1	$375.1	$439.3	$551.7	$624.6	$745.0	$822.3	$944.5	$1,024.5	$1,149.5	$1,232.3	$1,361.1	$1,440.9	
Total State Revenues	**$649.3**	**$985.6**	**$1,232.5**	**$1,372.5**	**$1,525.8**	**$1,769.8**	**$1,930.1**	**$2,183.5**	**$2,350.4**	**$2,605.6**	**$2,778.9**	**$3,040.7**	**$3,218.2**	**$3,489.5**	**$3,660.4**	**$29,491.2**
State Non-Education Expenditures	$117.9	$184.7	$240.5	$305.1	$368.7	$450.1	$529.0	$624.8	$716.4	$822.4	$923.4	$1,038.1	$1,146.8	$1,267.4	$1,381.2	
State Public Ed. Expenditures	$61.4	$96.5	$127.1	$163.3	$199.2	$249.6	$300.5	$362.1	$424.0	$495.5	$567.2	$648.1	$728.6	$817.0	$903.8	
State Higher-Ed Expenditures	$48.4	$72.4	$89.4	$108.0	$124.3	$145.9	$163.9	$186.3	$204.3	$226.1	$244.1	$266.5	$285.1	$307.7	$326.7	
GOED FIQ Incentive Amount	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	
Total State Operating Expenditures	**$227.7**	**$353.5**	**$457.0**	**$576.3**	**$692.2**	**$845.5**	**$993.3**	**$1,173.3**	**$1,344.6**	**$1,544.0**	**$1,734.6**	**$1,952.8**	**$2,160.5**	**$2,392.1**	**$2,611.8**	**$17,003.1**
Net State Operating Revenue (Expenditure)	**$421.6**	**$632.1**	**$775.5**	**$796.2**	**$833.6**	**$924.3**	**$936.8**	**$1,010.3**	**$1,005.8**	**$1,061.5**	**$1,044.3**	**$1,087.9**	**$1,057.7**	**$1,097.4**	**$1,048.6**	**$12,488.1**
Box Elder Fiscal Impacts																
Direct Local Tax Revenues[2]	$906.0	$1,632.0	$2,220.0	$2,220.0	$2,220.0	$2,220.0	$2,220.0	$2,220.0	$2,220.0	$2,220.0	$2,220.0	$2,220.0	$2,220.0	$2,220.0	$2,220.0	
Local Sales Tax Revenues[5]	$11.5	$9.5	$8.7	$10.6	$13.0	$17.3	$19.9	$24.4	$27.2	$31.9	$34.8	$39.6	$42.6	$47.5	$50.5	
Property Tax Revenues	$120.6	$89.6	$80.6	$98.7	$116.1	$154.3	$173.9	$213.9	$234.8	$275.5	$297.2	$338.6	$361.2	$403.4	$425.8	
Total Local Revenues	**$1,038.0**	**$1,731.1**	**$2,309.3**	**$2,329.4**	**$2,349.1**	**$2,391.6**	**$2,413.7**	**$2,458.4**	**$2,482.0**	**$2,527.4**	**$2,552.0**	**$2,598.1**	**$2,623.8**	**$2,670.9**	**$2,696.3**	**$32,048.4**
County Expenditures	$11.3	$14.2	$16.0	$19.1	$21.5	$25.6	$29.1	$34.3	$38.9	$45.2	$51.0	$58.4	$65.2	$73.7	$81.4	
Countywide Public Ed. Expenditures	$9.5	$12.0	$13.7	$16.6	$18.8	$23.3	$27.4	$33.0	$38.4	$45.3	$52.0	$60.3	$68.4	$78.0	$87.2	
Total Local Operating Expenditures	**$20.8**	**$26.2**	**$29.8**	**$35.7**	**$40.4**	**$48.9**	**$56.4**	**$67.2**	**$77.2**	**$90.5**	**$103.0**	**$118.7**	**$133.6**	**$151.6**	**$168.7**	**$1,042.7**
Net Local Operating Revenue (Expenditure)	**$1,017.3**	**$1,704.8**	**$2,279.6**	**$2,293.7**	**$2,308.8**	**$2,342.7**	**$2,357.3**	**$2,391.1**	**$2,404.8**	**$2,436.9**	**$2,449.0**	**$2,479.5**	**$2,490.2**	**$2,519.3**	**$2,527.6**	**$31,005.6**

1. State income taxes calculated based on ratio of county's state income tax liability (per State Tax Commission) to BEA personal income by place of residence.
2. Provided by Promontory Point Resources.
3. Corporate income taxes estimated based on ratio of corporate tax revenues (by industry) to REMI historical output by industry data.
4. Sales and gross receipts taxes.
5. Local sales tax revenues consist of total general sales and use taxes and the tourism restaurant tax.
6. NPV = Net present value at a 1.1% discount rate.

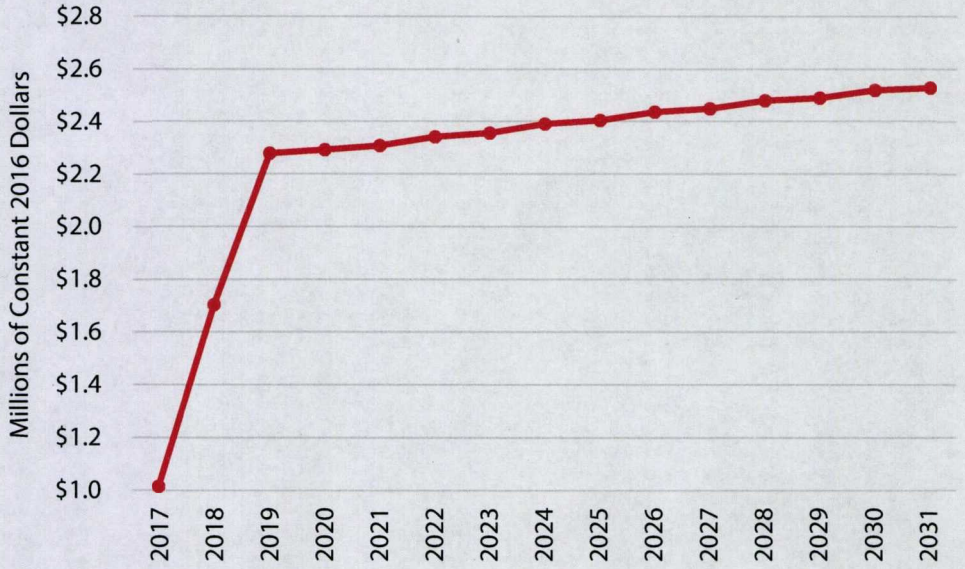
Source: Kem C. Gardner Policy Institute analysis of PPR data using the REMI PI+ model and Gardner Policy Institute fiscal model

Figure 3: New County Revenues and Expenditures Due to PPR Project, 2017–2031



Source: Kem C. Gardner Policy Institute analysis of PPR data using the REMI PI+ model and Gardner Policy Institute fiscal model

Figure 4: Change in Net County Revenues Due to PPR Project, 2017–2031



Source: Kem C. Gardner Policy Institute analysis of PPR data using the REMI PI+ model and Gardner Policy Institute fiscal model

Conclusion

Based on data provided by Promontory Point Resources, the proposed solid waste facility to be constructed and operated by PPR in Box Elder County would provide net positive new local and state revenues for each year of the analysis period, 2017 through 2031. Local employment and income impacts increase over time, for both Box Elder and the state. No local or state incentives were included in the calculations and the validity of the results rest on the quality of the input data. Finally, the Gardner Policy Institute did not consider potential intangible impacts to reputation or community perceptions of a large solid waste facility in the county.

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[1] Covered employment is the number of workers covered by unemployment insurance. According to the Bureau of Labor Statistics, "Covered private-industry employment includes most corporate officials, executives, supervisory personnel, professionals, clerical workers, wage earners, piece-workers, and part-time workers. Persons on paid sick leave, paid holiday, paid vacation, and the like are also included. Persons on the payroll of more than one firm during the period are counted by each UI-subject employer.... It excludes proprietors, the unincorporated self-employed, unpaid family members, and certain farm and domestic workers."

[2] Compensation equals wages and salaries plus employer contributions for employee pension and insurance funds and for government social insurance.

[3] Net present values were calculated using a 1.1 percent discount rate as recommended by OMB for cost-effectiveness analysis. See www.whitehouse.gov/omb/circulars_a094/a94_appx-c.

Appendix: Promontory Point Resources In-State-Only Operations

Per your request, below are the results of an analysis of Promontory Point Resources' in-state activities based on data provided by PPR. Table A1 summarizes the input data from PPR, Table A2 provides the associated economic and demographic impacts, and Table A3 shows the state and local fiscal impacts.

Table A1: Promontory Point Resources Solid Waste Facility Summary Data, In-State-Only Operations, 2017–2031
(Thousands of constant 2016 dollars)

	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
Total New Jobs	**18**	**25**	**30**	**37**	**44**	**51**	**58**	**65**	**72**	**79**	**86**	**93**	**100**	**107**	**114**
Mining (except Oil and Gas)	2	4	6	8	10	12	14	16	18	20	22	24	26	28	30
Waste Management and Remediation Services	16	21	24	29	34	39	44	49	54	59	64	69	74	79	84
Total New Compensation	**$2,586.6**	**$2,782.3**	**$3,604.2**	**$4,400.7**	**$5,197.2**	**$5,993.6**	**$6,790.1**	**$7,586.6**	**$8,383.1**	**$9,179.6**	**$9,976.1**	**$10,772.6**	**$11,569.1**	**$12,365.6**	**$13,162.1**
Mining (except Oil and Gas)	$114.7	$236.2	$365.0	$486.6	$608.3	$730.0	$851.6	$973.3	$1,094.9	$1,216.6	$1,338.2	$1,459.9	$1,581.6	$1,703.2	$1,824.9
Waste Management and Remediation Services	$2,471.9	$2,546.0	$3,239.2	$3,914.0	$4,588.9	$5,263.7	$5,938.5	$6,613.4	$7,288.2	$7,963.0	$8,637.8	$9,312.7	$9,987.5	$10,662.3	$11,337.2
Average Compensation (dollars)															
Mining (except Oil and Gas)	$57,338	$59,058	$60,829	$60,829	$60,829	$60,829	$60,829	$60,829	$60,829	$60,829	$60,829	$60,829	$60,829	$60,829	$60,829
Waste Management and Remediation Services	$154,493	$121,240	$134,966	$134,966	$134,966	$134,966	$134,966	$134,966	$134,966	$134,966	$134,966	$134,966	$134,966	$134,966	$134,966
In-State Expenditures	**$4,970.6**	**$4,183.8**	**$6,322.6**	**$6,737.9**	**$7,162.0**	**$7,595.1**	**$8,037.7**	**$8,490.2**	**$8,952.8**	**$9,426.2**	**$9,910.6**	**$10,406.5**	**$10,914.4**	**$11,434.8**	**$11,968.1**
Annual Growth Rate		-15.8%	51.1%	6.6%	6.3%	6.0%	5.8%	5.6%	5.4%	5.3%	5.1%	5.0%	4.9%	4.8%	4.7%
Utilities	$1,000.0	$20.0	$20.0	$20.0	$20.0	$20.0	$20.0	$20.0	$20.0	$20.0	$20.0	$20.0	$20.0	$20.0	$20.0
Heavy and Civil Engineering Construction	$2,500.0	$50.0	$50.0	$50.0	$50.0	$50.0	$50.0	$50.0	$50.0	$50.0	$50.0	$50.0	$50.0	$50.0	$50.0
Truck Transportation	$824.0	$3,418.2	$5,351.5	$5,567.7	$5,792.7	$6,026.7	$6,270.2	$6,523.5	$6,787.1	$7,061.3	$7,346.5	$7,643.3	$7,952.1	$8,273.4	$8,607.6
Mining Operations	$28.7	$59.1	$91.2	$121.7	$152.1	$182.5	$212.9	$243.3	$273.7	$304.1	$334.6	$365.0	$395.4	$425.8	$456.2
Waste Management Operations	$618.0	$636.5	$809.8	$978.5	$1,147.2	$1,315.9	$1,484.6	$1,653.3	$1,822.0	$1,990.8	$2,159.5	$2,328.2	$2,496.9	$2,665.6	$2,834.3
Gross Revenue															
In-State	$2,436.0	$8,806.7	$12,190.3	$14,800.5	$15,096.5	$15,398.4	$15,706.4	$16,020.5	$16,340.9	$16,667.7	$17,001.1	$17,341.1	$17,687.9	$18,041.7	$18,402.5
Annual Growth Rate		261.5%	38.4%	21.4%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
Taxes															
State Corporate Income Tax	$0.0	$79.1	$116.5	$136.1	$155.2	$173.1	$189.3	$206.3	$221.9	$239.0	$254.6	$273.4	$292.5	$311.1	$332.4
Property Tax	$300.0	$300.0	$300.0	$300.0	$300.0	$300.0	$300.0	$300.0	$300.0	$300.0	$300.0	$300.0	$300.0	$300.0	$300.0
Other Local Taxes	$270.0	$983.8	$1,329.9	$1,356.5	$1,383.6	$1,411.3	$1,439.5	$1,468.3	$1,497.7	$1,527.6	$1,558.2	$1,589.3	$1,621.1	$1,653.5	$1,686.6
Total Local Taxes	$570.0	$1,283.8	$1,629.9	$1,656.5	$1,683.6	$1,711.3	$1,739.5	$1,768.3	$1,797.7	$1,827.6	$1,858.2	$1,889.3	$1,921.1	$1,953.5	$1,986.6

Source: Promontory Point Resources.

Table A2: Promontory Point Resources In-State-Only Operations Summary Economic and Demographic Impacts, 2017–2031

Impact	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	Average
Box Elder County																
Total Employment[1]	60	53	65	76	86	97	107	117	127	136	145	154	164	173	182	116
Direct	18	25	30	37	44	51	58	65	72	79	86	93	100	107	114	65
Indirect & Induced	42	28	35	39	42	46	49	52	55	57	59	61	64	66	68	51
Personal Income (millions of 2016 $)	$3.4	$3.2	$4.1	$4.9	$5.6	$6.4	$7.1	$7.8	$8.6	$9.3	$10.1	$10.8	$11.5	$12.3	$13.0	$7.9
Total Population	11	13	16	19	21	24	28	31	35	39	44	49	54	60	66	
School Age (5–17 years old)	2	2	3	3	4	5	5	6	7	8	9	10	12	13	15	
College Age (18–29 years old)	3	4	4	5	5	6	6	7	7	8	9	9	10	11	12	
Rest of State																
Indirect & Induced Employment[1]	60	64	81	92	101	110	118	126	132	139	145	152	158	164	171	121
Personal Income (millions of 2016 $)	$4.0	$4.4	$5.8	$6.8	$7.8	$8.8	$9.8	$10.7	$11.7	$12.6	$13.5	$14.4	$15.4	$16.3	$17.2	$10.6
Total Population	34	49	67	87	107	127	148	168	188	208	228	248	267	286	304	
School Age (5–17 years old)	6	8	12	15	19	23	28	32	37	42	47	52	57	62	67	
College Age (18–29 years old)	11	15	20	25	29	33	37	40	42	45	47	48	50	52	54	
Statewide Total																
Total Employment[1]	120	117	146	168	188	207	225	243	259	275	290	306	321	337	353	237
Direct	18	25	30	37	44	51	58	65	72	79	86	93	100	107	114	65
Indirect & Induced	102	92	116	131	144	156	167	178	187	196	204	213	221	230	239	172
Personal Income (millions of 2016 $)	$7.4	$7.6	$9.9	$11.7	$13.4	$15.2	$16.9	$18.6	$20.2	$21.9	$23.6	$25.2	$26.9	$28.6	$30.2	$18.5
Total Population	45	62	83	105	128	152	175	199	224	248	272	296	321	345	370	
School Age (5–17 years old)	8	11	14	19	23	28	33	38	44	50	56	62	69	75	82	
College Age (18–29 years old)	14	19	24	30	35	39	43	47	50	52	55	58	60	63	66	

Note: Employment and personal income impacts are for the given year only; population impacts accumulate over time.

1. Employment is measured as full- and part-time jobs, counted equally.

Source: Kem C. Gardner Policy Institute analysis of PPR data using the REMI PI+ model

Table A3: Promontory Point Estimated Fiscal Impacts for the State of Utah and Box Elder County, 2017–2031
(Thousands of constant 2016 dollars)

Impact	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	NPV[6]
State Fiscal Impacts																
Personal Income Tax Revenues[1]	$197.1	$204.4	$264.4	$312.6	$359.6	$405.8	$451.8	$497.3	$541.9	$586.0	$630.4	$675.0	$720.0	$765.9	$808.1	
Direct Corporate Income Tax[2]	$0.0	$79.1	$116.5	$136.1	$155.2	$173.1	$189.3	$206.3	$221.9	$239.0	$254.6	$273.4	$292.5	$311.1	$332.4	
Additional Corporate Income Tax Revenues[3]	$12.7	$12.6	$16.2	$18.4	$20.5	$22.4	$24.4	$26.4	$28.2	$30.1	$31.9	$33.8	$35.8	$37.7	$39.7	
State Sales Tax Revenues[4]	$211.6	$219.3	$283.8	$335.4	$385.9	$435.5	$484.8	$533.7	$581.6	$628.9	$676.5	$724.3	$772.7	$821.9	$867.2	
Total State Revenues	**$421.4**	**$515.4**	**$681.0**	**$802.6**	**$921.3**	**$1,036.8**	**$1,150.3**	**$1,263.7**	**$1,373.7**	**$1,484.0**	**$1,593.4**	**$1,706.5**	**$1,821.0**	**$1,936.6**	**$2,047.3**	**$16,877.7**
State Non-Education Expenditures	$93.7	$129.3	$174.4	$221.4	$269.6	$318.7	$368.6	$419.3	$469.8	$520.5	$571.4	$622.7	$674.1	$725.9	$777.9	
State Public Ed. Expenditures	$48.9	$68.2	$93.0	$119.0	$147.9	$179.0	$211.7	$246.3	$282.5	$320.1	$359.1	$399.4	$440.6	$482.7	$525.2	
State Higher-Ed Expenditures	$37.2	$48.9	$63.2	$76.9	$89.7	$101.2	$111.5	$120.6	$128.5	$135.6	$142.4	$149.1	$155.8	$162.9	$170.4	
GOED FIQ Incentive Amount	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	
Total State Operating Expenditures	**$179.8**	**$246.4**	**$330.6**	**$417.2**	**$507.1**	**$598.8**	**$691.8**	**$786.2**	**$880.9**	**$976.2**	**$1,072.9**	**$1,171.1**	**$1,270.5**	**$1,371.5**	**$1,473.5**	**$10,721.2**
Net State Operating Revenue (Expenditure)	**$241.6**	**$269.0**	**$350.3**	**$385.4**	**$414.1**	**$438.0**	**$458.5**	**$477.4**	**$492.8**	**$507.7**	**$520.6**	**$535.4**	**$550.4**	**$565.1**	**$573.8**	**$6,156.4**
Box Elder Fiscal Impacts																
Direct Local Tax Revenues[2]	$570.0	$1,283.8	$1,629.9	$1,656.5	$1,683.6	$1,711.3	$1,739.5	$1,768.3	$1,797.7	$1,827.6	$1,858.2	$1,889.3	$1,921.1	$1,953.5	$1,986.6	
Local Sales Tax Revenues[5]	$7.7	$7.2	$9.3	$11.0	$12.7	$14.4	$16.1	$17.8	$19.4	$21.1	$22.7	$24.4	$26.1	$27.8	$29.4	
Property Tax Revenues	$72.0	$64.2	$82.2	$96.5	$110.7	$124.9	$138.9	$152.8	$166.6	$180.1	$193.7	$207.3	$221.0	$234.9	$247.8	
Total Local Revenues	**$649.8**	**$1,355.2**	**$1,721.4**	**$1,763.9**	**$1,807.0**	**$1,850.5**	**$1,894.5**	**$1,938.9**	**$1,983.6**	**$2,028.8**	**$2,074.6**	**$2,121.1**	**$2,168.2**	**$2,216.2**	**$2,263.8**	**$25,317.0**
County Expenditures	$4.9	$5.9	$7.2	$8.5	$9.8	$11.2	$12.7	$14.4	$16.1	$18.0	$20.1	$22.3	$24.8	$27.4	$30.3	
Countywide Public Ed. Expenditures	$4.2	$5.0	$6.2	$7.4	$8.8	$10.4	$12.1	$14.1	$16.2	$18.5	$21.0	$23.8	$26.7	$29.9	$33.3	
Total Local Operating Expenditures	**$9.1**	**$10.9**	**$13.5**	**$15.9**	**$18.6**	**$21.7**	**$24.9**	**$28.5**	**$32.3**	**$36.5**	**$41.1**	**$46.1**	**$51.5**	**$57.3**	**$63.5**	**$421.7**
Net Local Operating Revenue (Expenditure)	**$640.7**	**$1,344.4**	**$1,707.9**	**$1,748.0**	**$1,788.4**	**$1,828.9**	**$1,869.6**	**$1,910.4**	**$1,951.3**	**$1,992.3**	**$2,033.5**	**$2,075.0**	**$2,116.7**	**$2,158.9**	**$2,200.3**	**$24,895.3**

1. State income taxes calculated based on ratio of county's state income tax liability (per State Tax Commission) to BEA personal income by place of residence.
2. Provided by Promontory Point Resources; includes direct property taxes and "other local taxes."
3. Corporate income taxes estimated based on ratio of corporate tax revenues (by industry) to REMI historical output by industry data.
4. Sales and gross receipts taxes.
5. Local sales tax revenues consist of total general sales and use taxes and the tourism restaurant tax.
6. NPV = Net present value at a 1.1% discount rate.

Source: Kem C. Gardner Policy Institute analysis of PPR data using the REMI PI+ model and Gardner Policy Institute fiscal model

Appendix B

Gardner Policy Institute,

Utah's Long-Term Demographic and Economic Projections

Research Brief

July 2017

Kem C. Gardner POLICY INSTITUTE
THE UNIVERSITY OF UTAH

Utah's Long-Term Demographic and Economic Projections Summary

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Background

The Kem C. Gardner Policy Institute prepares long-term demographic and economic projections to support informed decision making in the state. The Utah Legislature funds this research, which is done in collaboration with the Governor's Office of Management and Budget, the Office of the Legislative Fiscal Analyst, the Utah Association of Governments, and other research entities. These 50-year projections indicate continued population growth and illuminate a range of future dynamics and structural shifts for Utah. An initial set of products is available online at gardner.utah.edu. Additional research briefs, fact sheets, web-enabled visualizations, and other products will be produced in the coming year.

State-Level Results

Population

- Utah's population is projected to increase from approximately 3 million in 2015 to 5.8 million in 2065. This represents an increase of 2.8 million people with an annual average rate of change of 1.3 percent.
- The Utah population reached 3 million in 2015. Utah is projected to reach 4 million in 2032 (17 years after 2015), 5 million in 2050 (18 years after 2032), and 5.8 million in 2065.
- Though growth rates are projected to decelerate over the next 50 years, they are also projected to exceed national growth rates. Utah's growth in each decade ranges from 9.7 percent (2050-2060) to 16.7 percent growth (2010-2020). The national range is 4.4 percent (2050-2060) to 7.5 percent (2010-2020).

Components of Population Change

- Utah's total fertility rate (average number of children born to a Utah woman in her lifetime) is projected to continue the existing trend of a slow decline. From 2015-2065, rates are projected to decline from 2.32 to 2.29. These rates are projected to remain higher than national rates that move from 1.87 to 1.86 over a similar period.
- In 2065, life expectancy in Utah is projected to be 86.3 for women and 85.2 for men. This is an increase of approximately 4 years for women and 6 years for men. The sharper increase for men narrows the life expectancy gap traditionally seen between the sexes.
- Natural increase (births minus deaths) is projected to remain positive and account for two-thirds of the cumulative population increase to 2065. However, given increased life expectancy and declining fertility, the rate and amount of natural increase are projected to slowly decline over time.
- Net migration accounts for one-third of the cumulative population increase to 2065. Projections show the contributions of natural increase and net migration converging over time.

Age Composition

- Utah's median age is projected to increase by seven and a half years, rising from 30.7 years in 2015 to 38.3 years in 2065. This is a result of declining fertility and increasing life expectancy, which contribute to a larger share of retirement age persons in the population.
- The share of the population ages 65 and older is projected to double over the next 50 years, rising from 10.2 percent of the population in 2015 to 20.3 percent in 2065.
- In 2015, Utah had 372 centenarians (people at least 100 years old). That number is projected to be nearly 20 times greater by 2065, reaching 6,846 centenarians.

- The population ages 5-17 is projected to increase, but compose a smaller share of the population in 2065 than it does today. The school age population is projected to grow from 666,974 in 2015 to 996,717 in 2065, decreasing as a share of the total population from 22.3 percent to 17.1 percent.
- The dependency ratio is the population ages 0-17 and 65-plus per 100 persons ages 18-64. Utah's dependency ratio, which is higher than the national dependency ratio, is projected to rise in the next 50 years principally because of the aging population. The gap between Utah and U.S. dependency ratios is projected to decrease.

Households and Employment

- The number of households is projected to grow steadily into the future, but average household size (persons per household) is projected to decrease from 2.99 in 2015 to 2.57 in 2065.
- Projections indicate stable employment growth as well as population growth.
- The fastest-growing industries between 2015 and 2065 are projected to be construction, professional and scientific services, health care, education, and arts, entertainment, and recreation.

County-Level Results

Population

- All counties are projected to grow over the next 50 years. Projected growth is most prevalent in Utah's largest counties adjacent to Salt Lake and Utah Counties, and in southwest Utah.

Utah County

- Utah County is projected to have the largest numeric increase in population, adding over one million new residents to reach 1.6 million by 2065. The Utah County population nearly approaches the population of Salt Lake County by 2065.
- The Utah County population is projected to increase by 177 percent from 2015 to 2065, ranking it as the third fastest growing county over the projection period.
- By 2065, 28 percent of the state's population will reside in Utah County.
- Cumulatively, over the next fifty years, 37 percent of the state's population growth is projected to be in Utah County. This means nearly 4 of every 10 new Utah residents will live in Utah County.

Salt Lake County

- Salt Lake County is projected to remain the most populous in the state, reaching nearly 1.7 million people.
- Salt Lake County is projected to add nearly 600,000 new residents by 2065 and capture 21 percent of the total state population growth.

Washington County

- Washington County is projected to have the most rapid rate of growth among all counties (229 percent increase over the next 50 years).
- The population in Washington County is projected to grow to over half a million (509,000) by 2065.
- Washington County is projected to surpass Weber County to become the fourth most populous county in the state.

"Ring" Counties

- The population of the metropolitan area is projected to geographically expand beyond the four Wasatch Front urban core counties into four accessible surrounding counties.
- Wasatch County is projected to have the second highest percentage increase in the state (187 percent over 50 years). It has strong commuting ties to Summit, Salt Lake, and Utah Counties.
- Juab County is projected to have the fourth most rapid percentage growth in the state (172 percent increase over 50 years). This growth is especially tied to the Utah County growth dynamic.
- Morgan County is projected to have the fifth most rapid growth rate in the state (122 percent over 50 years). It has strong commuting ties to Weber, Davis, and Salt Lake Counties.
- Tooele County is projected to be the sixth most rapidly growing population in the state (112 percent increase over the next 50 years). It has strong commuting ties with Salt Lake County.

Households

- Over the next 50 years, Utah County is projected to capture 31 percent of the state's household growth. Counties with rapid population growth rates also tend to have high household growth rates. Growth rate rankings among the top five counties are identical, except in the cases of Utah and Juab Counties. Utah County has the third highest population growth rate, but the fourth highest household growth rate. Juab rankings are the reverse. This occurs because of the relatively large household sizes (persons per household) in Utah County.

- Utah County is projected to add 382,000 new households, the most of any county. Salt Lake County ranks second, with an additional 310,000 households. Washington County is projected to add 150,000 households, the third highest among all counties. The fourth largest increase in households is projected for Davis County, with 102,000 net new households. These four counties account for over three-quarters of projected household growth over the next 50 years.

Employment

- Salt Lake County is projected to maintain its role as the dominant employer in the state. By 2065, it is projected to employ 4 of every 10 workers in Utah, down slightly from its current level of 45 percent. The capital county is projected to create 610,000 new jobs, over one-third of the state's net employment growth.
- Utah County is projected to add 576,000 jobs and increase its share of total state employment from 17 percent to nearly one quarter (24 percent) of all state jobs. This is an increase of 185 percent, the highest growth rate among counties. One in three of the state's new jobs are projected to be in Utah County.
- Davis County is projected to add 156,000 net new jobs, ranking third in absolute growth behind Salt Lake and Utah Counties.
- Washington County employment is projected to increase by 153 percent by 2065, the second highest percentage growth behind Utah County. It is projected to add 131,000 jobs.

Table 1
Utah Population by County
2015-2065

County	2015	2025	2035	2045	2055	2065	Absolute Change 2015-2065	Percent Change 2015-2065	Rank
Beaver	6,710	7,408	8,017	8,606	9,068	9,649	2,939	44%	26
Box Elder	52,971	60,984	67,664	74,440	80,334	86,218	33,247	63%	11
Cache	121,855	146,338	171,969	195,325	212,908	234,744	112,890	93%	7
Carbon	21,164	24,343	26,870	29,069	31,240	33,144	11,980	57%	16
Daggett	1,113	1,232	1,387	1,502	1,603	1,723	610	55%	17
Davis	336,091	385,800	428,627	474,028	510,712	544,958	208,867	62%	12
Duchesne	20,821	24,277	26,596	29,178	31,205	33,153	12,332	59%	14
Emery	10,659	11,550	12,507	13,345	14,226	15,364	4,706	44%	25
Garfield	5,164	5,845	6,405	6,697	7,083	7,509	2,345	45%	24
Grand	9,757	11,182	12,203	13,266	14,139	14,794	5,037	52%	21
Iron	49,406	59,900	67,803	74,812	81,589	89,599	40,193	81%	8
Juab	11,071	15,789	19,925	23,307	26,498	30,069	18,998	172%	4
Kane	7,271	8,684	9,611	10,179	10,736	11,446	4,175	57%	15
Millard	13,104	14,403	15,619	16,605	17,435	18,617	5,514	42%	28
Morgan	11,080	15,613	19,349	21,357	22,678	24,605	13,525	122%	5
Piute	1,631	1,699	1,872	1,938	1,995	2,149	518	32%	29
Rich	2,353	2,535	2,773	2,992	3,158	3,380	1,027	44%	27
Salt Lake	1,094,650	1,249,961	1,361,099	1,470,574	1,594,804	1,693,513	598,863	55%	18
San Juan	15,902	17,932	19,330	20,562	21,775	23,316	7,413	47%	23
Sanpete	29,088	33,696	38,580	41,682	44,609	49,590	20,502	70%	10
Sevier	21,238	24,494	26,896	28,879	30,774	32,802	11,563	54%	20
Summit	39,278	46,404	54,706	60,644	65,624	70,750	31,472	80%	9
Tooele	63,262	83,922	102,338	115,463	125,291	134,272	71,010	112%	6
Uintah	37,396	42,077	45,978	50,609	54,523	57,766	20,370	54%	19
Utah	585,694	768,346	968,498	1,192,304	1,396,997	1,620,246	1,034,552	177%	3
Wasatch	28,613	42,027	54,218	64,526	73,042	82,018	53,406	187%	2
Washington	154,602	219,019	286,768	355,549	429,295	508,952	354,350	229%	1
Wayne	2,725	2,985	3,363	3,593	3,792	4,130	1,405	52%	22
Weber	242,737	286,593	317,344	344,025	368,635	389,334	146,597	60%	13
State Total	**2,997,404**	**3,615,036**	**4,178,317**	**4,745,057**	**5,285,767**	**5,827,810**	**2,830,406**	**94%**	

Source: Kem C. Gardner Policy Institute 2015-2065 State and County Projections; DemographyUTAH Population Committee 2010-2016 Population Estimates.

Table 2
Utah Households by County
2015-2065

County	2015	2025	2035	2045	2055	2065	Absolute Change 2015-2065	Percent Change 2015-2065	Rank
Beaver	2,399	2,806	3,161	3,456	3,697	3,995	1,596	67%	22
Box Elder	17,711	21,572	25,058	28,249	30,865	33,826	16,116	91%	13
Cache	37,645	47,540	57,627	66,376	73,831	83,168	45,523	121%	7
Carbon	8,114	9,558	10,824	11,893	12,889	13,928	5,813	72%	20
Daggett	504	567	568	611	659	675	171	34%	29
Davis	106,535	130,716	154,027	174,162	190,571	208,380	101,845	96%	12
Duchesne	6,771	8,102	9,198	10,149	10,992	11,804	5,033	74%	19
Emery	3,836	4,441	5,006	5,420	5,918	6,509	2,673	70%	21
Garfield	2,048	2,351	2,561	2,698	2,821	3,026	977	48%	27
Grand	4,270	5,177	5,955	6,616	7,212	7,680	3,410	80%	18
Iron	16,690	21,996	25,902	29,242	32,663	36,796	20,105	120%	8
Juab	3,526	5,306	7,152	8,760	10,282	11,945	8,419	239%	3
Kane	3,070	3,825	4,232	4,423	4,675	5,033	1,963	64%	23
Millard	4,578	5,300	5,956	6,371	6,815	7,428	2,850	62%	24
Morgan	3,485	5,254	6,926	7,992	8,832	9,804	6,319	181%	5
Piute	696	762	839	854	864	954	258	37%	28
Rich	888	1,009	1,105	1,204	1,287	1,379	491	55%	26
Salt Lake	379,320	454,929	521,352	579,472	635,143	689,490	310,170	82%	16
San Juan	5,146	6,489	7,635	8,591	9,514	10,539	5,393	105%	10
Sanpete	8,611	10,865	12,793	14,192	15,744	17,937	9,326	108%	9
Sevier	7,553	9,279	10,559	11,548	12,526	13,629	6,076	80%	17
Summit	15,044	19,126	23,289	26,140	28,300	30,357	15,313	102%	11
Tooele	20,707	30,108	38,929	45,686	51,099	55,536	34,829	168%	6
Uintah	12,390	14,773	17,175	19,366	21,255	22,954	10,564	85%	15
Utah	164,270	228,671	301,558	380,404	459,411	546,481	382,211	233%	4
Wasatch	9,329	14,934	20,301	24,921	29,077	33,104	23,776	255%	2
Washington	55,377	83,595	111,434	139,895	171,615	204,976	149,599	270%	1
Wayne	1,134	1,301	1,450	1,547	1,657	1,813	679	60%	25
Weber	85,795	105,945	123,153	137,384	148,917	160,949	75,154	88%	14
State Total	**987,442**	**1,256,295**	**1,515,728**	**1,757,619**	**1,989,132**	**2,234,094**	**1,246,652**	**126%**	

Source: Kem C. Gardner Policy Institute 2015-2065 State and County Projections.

Table 3
Utah Employment by County
2015-2065

County	2015	2025	2035	2045	2055	2065	Absolute Change 2015-2065	Percent Change 2015-2065	Rank
Beaver	4,047	4,712	5,121	5,471	5,800	6,136	2,089	52%	29
Box Elder	26,715	32,201	36,043	39,430	42,740	45,989	19,274	72%	16
Cache	73,119	89,331	102,066	113,435	124,227	134,247	61,128	84%	8
Carbon	11,266	13,974	15,796	17,285	18,629	19,923	8,657	77%	13
Daggett	634	748	832	914	998	1,084	450	71%	17
Davis	172,614	215,258	246,967	275,547	302,616	328,512	155,898	90%	6
Duchesne	12,581	15,695	17,285	18,374	19,318	20,384	7,803	62%	22
Emery	5,036	5,910	6,545	7,180	7,840	8,559	3,523	70%	18
Garfield	3,420	4,063	4,461	4,814	5,144	5,453	2,033	59%	24
Grand	7,569	9,326	10,466	11,492	12,480	13,437	5,868	78%	12
Iron	23,894	29,036	32,971	36,513	39,895	43,126	19,232	80%	11
Juab	5,112	6,214	7,083	7,860	8,626	9,398	4,286	84%	7
Kane	4,799	5,554	6,106	6,591	7,016	7,375	2,576	54%	27
Millard	6,846	7,893	8,644	9,344	10,007	10,633	3,787	55%	25
Morgan	4,456	5,527	6,409	7,258	8,141	9,079	4,623	104%	4
Piute	633	713	781	847	911	975	342	54%	26
Rich	1,445	1,686	1,878	2,054	2,219	2,374	929	64%	21
Salt Lake	844,316	1,053,362	1,182,092	1,293,225	1,385,240	1,454,567	610,251	72%	15
San Juan	6,386	7,738	8,684	9,447	10,146	10,850	4,464	70%	19
Sanpete	11,990	14,254	16,074	17,725	19,338	20,924	8,934	75%	14
Sevier	11,938	14,564	16,114	17,302	18,302	19,220	7,282	61%	23
Summit	39,799	49,973	57,240	64,008	70,583	76,693	36,894	93%	5
Tooele	21,331	26,266	29,791	32,892	35,814	38,583	17,252	81%	10
Uintah	19,161	23,817	26,497	28,496	30,283	32,179	13,018	68%	20
Utah	311,650	423,013	520,050	629,808	753,266	887,896	576,246	185%	1
Wasatch	14,111	17,957	21,049	23,972	26,929	29,967	15,856	112%	3
Washington	85,410	123,225	154,444	180,362	200,966	216,247	130,837	153%	2
Wayne	1,763	2,141	2,414	2,668	2,927	3,204	1,441	82%	9
Weber	131,651	169,524	184,636	192,441	197,804	201,696	70,045	53%	28
State Total	**1,863,692**	**2,373,675**	**2,728,541**	**3,056,754**	**3,368,205**	**3,658,710**	**1,795,018**	**96%**	

Sources: Kem C. Gardner Policy Institute 2015-2065 State and County Projections; U.S. Bureau of Economic Analysis Local Area Employment data

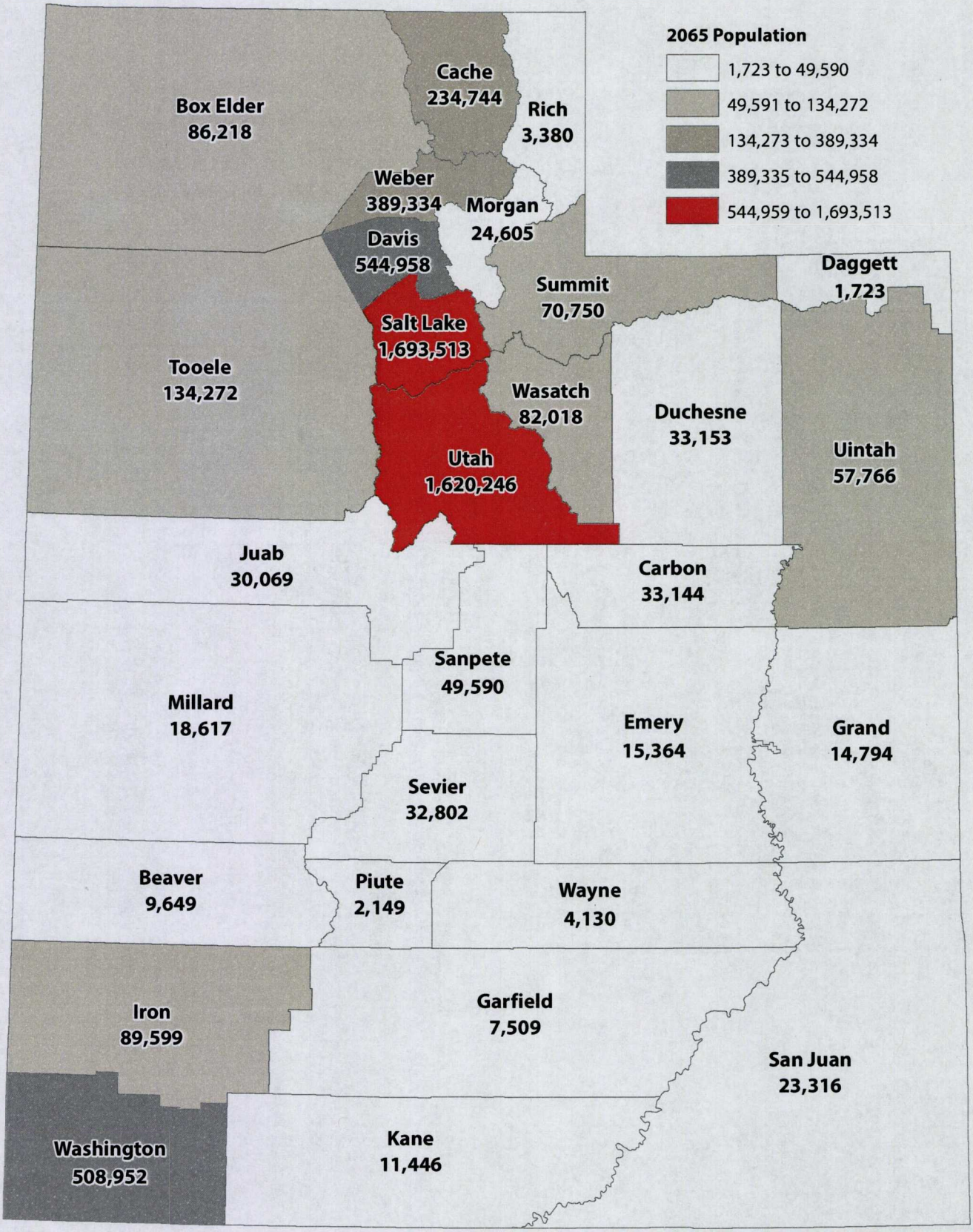
Table 4
Utah Total Employment by Industry
2015-2065

Wage and Salary Employment	2015	2025	2035	2045	2055	2065	Absolute Change 2015-2065	Percent Change 2015-2065	Rank
Agriculture	5,375	6,139	6,680	7,261	7,878	8,527	3,152	58.7%	10
Mining	10,371	14,594	14,842	13,603	11,955	10,810	439	4.2%	17
Utilities	3,915	3,396	2,853	2,746	2,729	2,707	-1,207	-30.8%	21
Construction	84,679	139,236	189,393	245,869	313,012	394,184	309,505	365.5%	1
Manufacturing	123,742	138,616	144,029	148,167	152,890	156,397	32,655	26.4%	16
Retail	157,969	179,273	189,685	201,068	211,428	220,018	62,050	39.3%	14
Transportation and Warehousing	51,122	65,317	64,180	60,221	53,381	44,673	-6,449	-12.6%	20
Wholesale	50,004	61,934	66,637	69,321	71,380	73,100	23,096	46.2%	12
Information	34,443	43,727	52,475	63,234	74,976	85,930	51,487	149.5%	5
Finance and Insurance	60,386	74,663	84,591	95,522	105,455	113,366	52,981	87.7%	8
Real Estate	18,643	21,591	24,105	26,032	27,040	26,307	7,664	41.1%	13
Professional and Technical Services	88,018	137,359	181,517	222,857	260,580	292,024	204,007	231.8%	2
Management	20,203	19,539	17,860	16,383	14,673	12,541	-7,661	-37.9%	22
Administrative and Waste Services	85,999	130,583	162,265	191,742	220,526	248,263	162,264	188.7%	3
Education	42,128	61,471	70,392	75,231	80,101	86,199	44,071	104.6%	7
Health	140,163	190,858	232,200	261,278	280,145	289,890	149,727	106.8%	6
Arts, Ent, Rec	21,111	30,207	36,676	43,465	50,219	55,756	34,645	164.1%	4
Accommodations and Food	112,549	137,441	143,292	147,809	151,409	154,388	41,840	37.2%	15
Other services	38,697	37,176	40,101	41,403	39,984	35,587	-3,110	-8.0%	19
State and Local Government	198,676	233,844	264,700	296,485	328,071	358,892	160,217	80.6%	9
Federal Government, Civilian	34,958	40,581	43,789	46,583	49,215	51,831	16,873	48.3%	11
Federal Government, Military	16,166	15,296	15,277	15,320	15,350	15,356	-810	-5.0%	18
All Other Employment*	464,381	590,834	681,001	765,152	845,806	921,964	457,583	98.5%	
State Total	**1,863,692**	**2,373,675**	**2,728,541**	**3,056,754**	**3,368,205**	**3,658,710**	**1,795,018**	**96.3%**	

*Includes farm, sole proprietor, and other categories of employment not covered by the Utah Department of Workforce Services Quarterly Census of Employment and Wages.

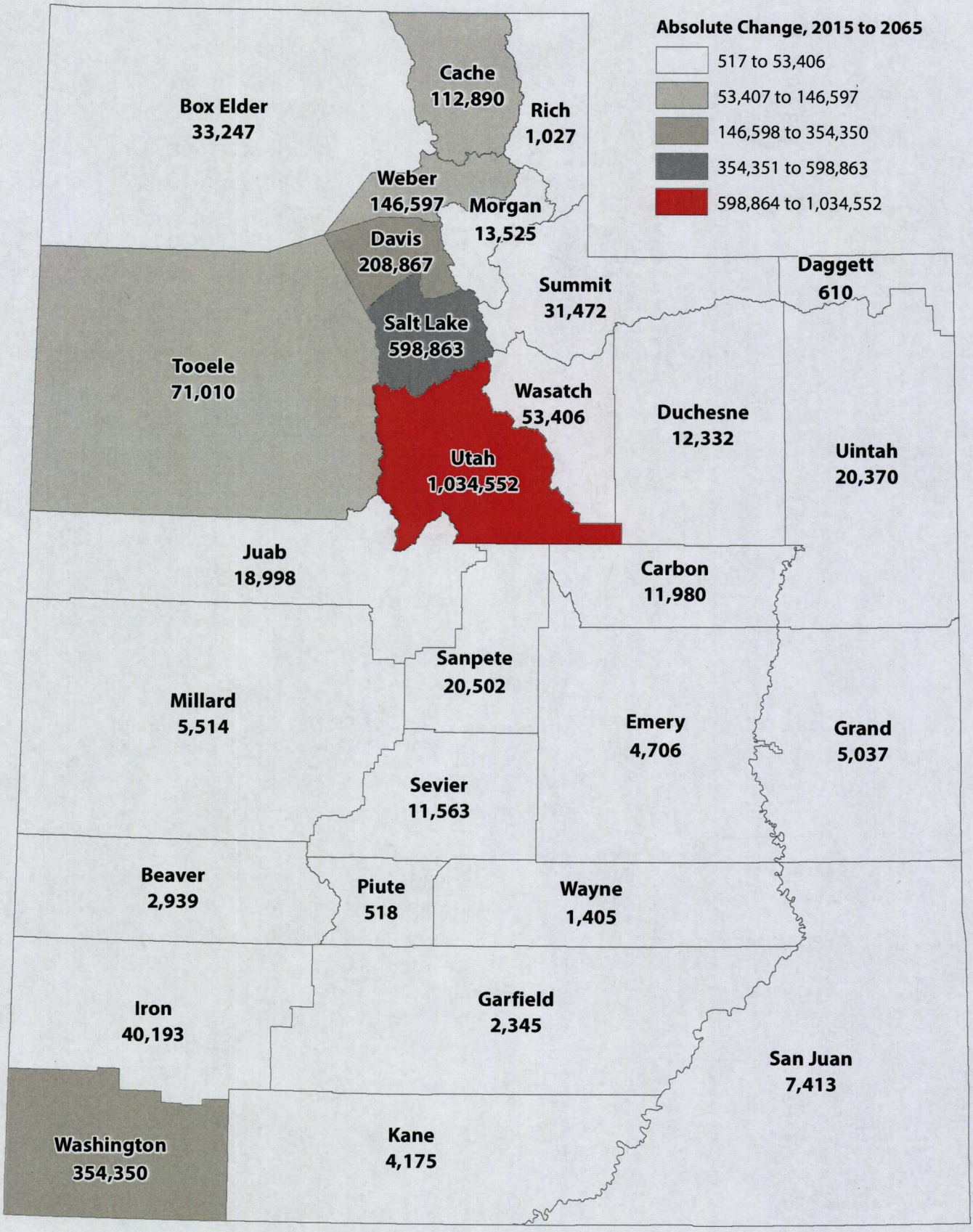
Sources: Kem C. Gardner Policy Institute 2015 - 2065 State and County Projections; U.S. Bureau of Economic Analysis Local Area Employment data; Utah Department of Workforce Services Quarterly Census of Employment and Wages data

Figure 1:
Utah Population by County
2065



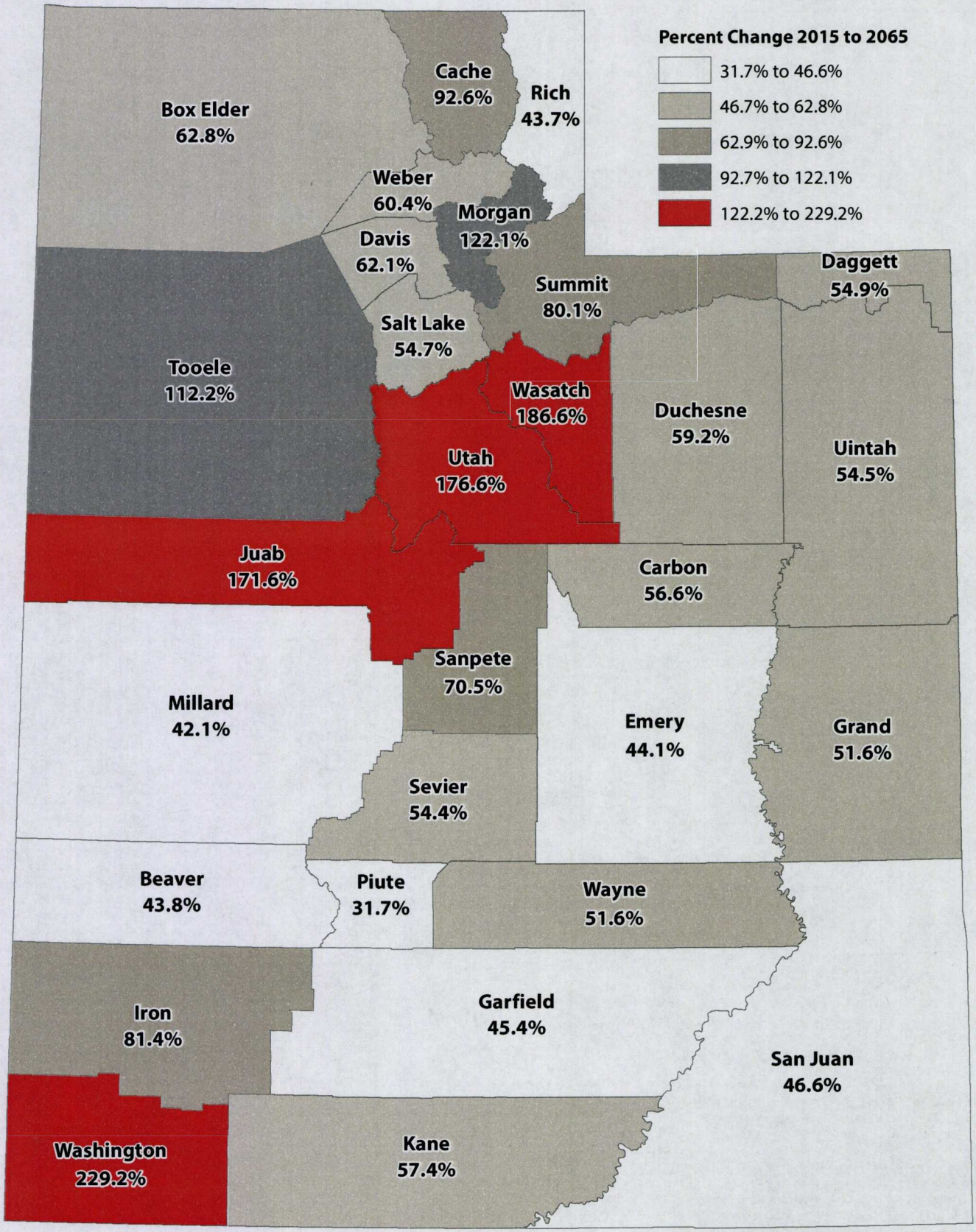
Source: Kem C. Gardner Policy Institute 2015-2065 State and County Projections.

Figure 2:
Absolute Change in Utah Population by County
2015-2065



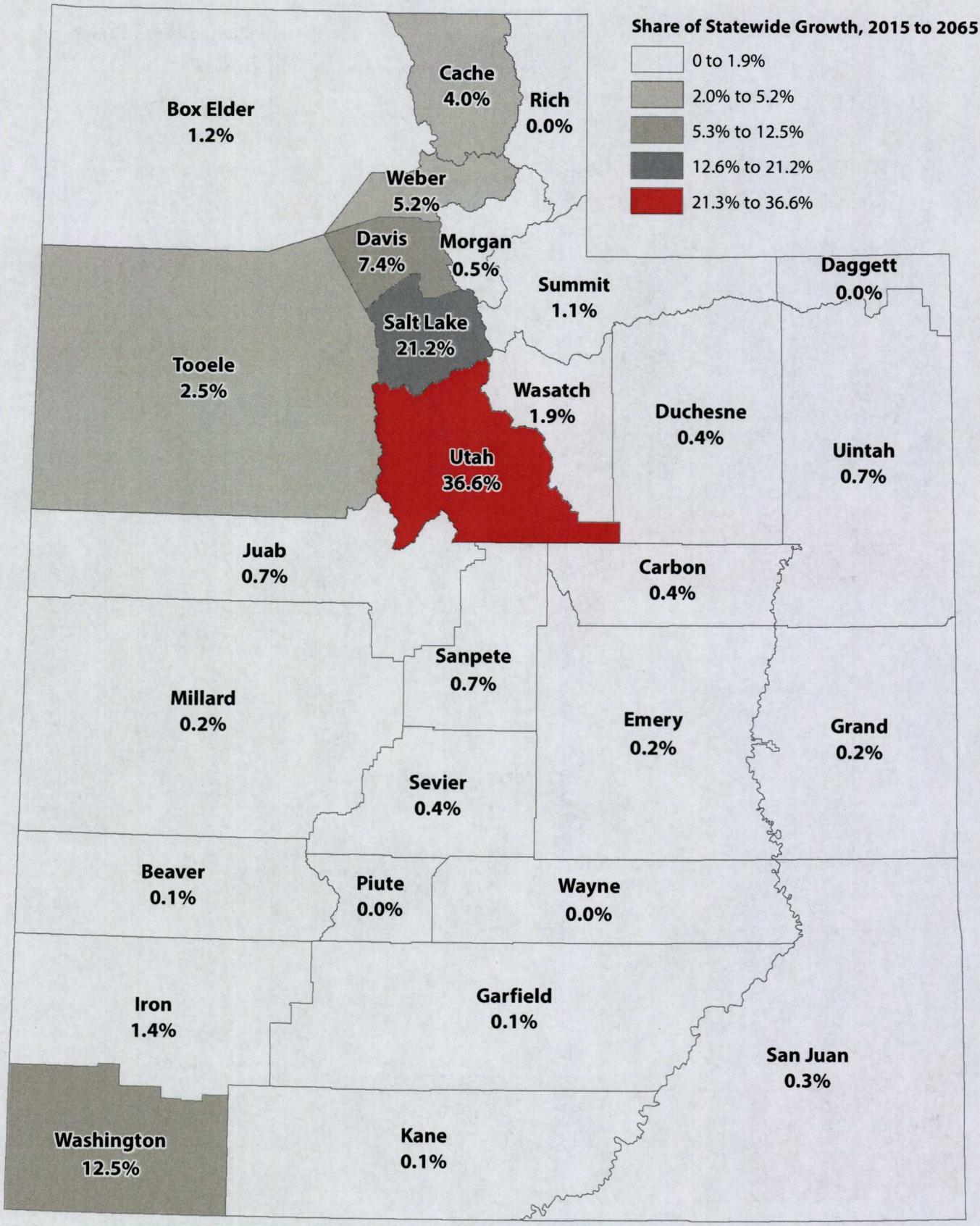
Sources: Kem C. Gardner Policy Institute 2015-2065 State and County Projections; DemographyUTAH Population Committee 2010-2016 Population Estimates.

Figure 3:
Percent Change in Utah Population by County
2015-2065



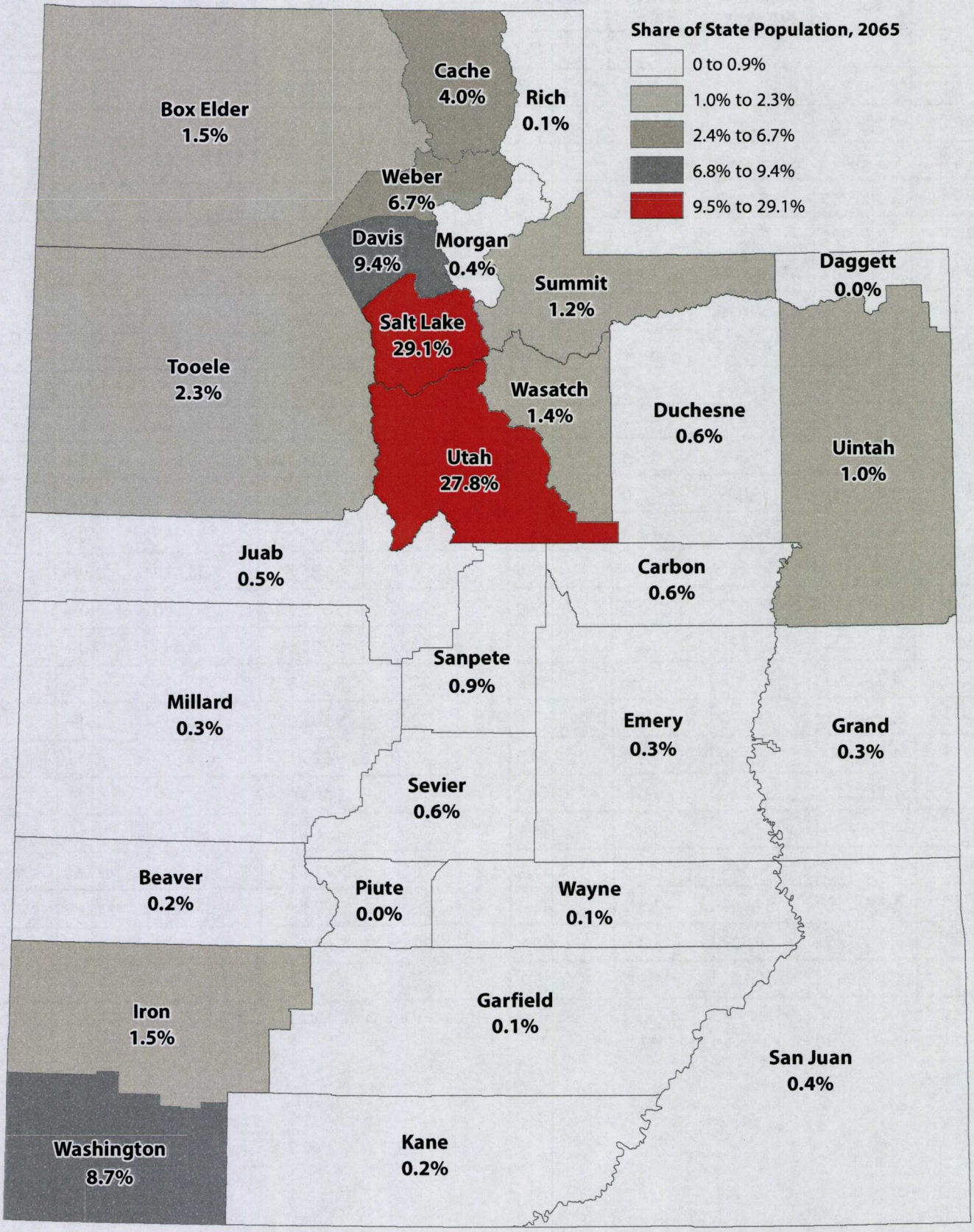
Sources: Kem C. Gardner Policy Institute 2015-2065 State and County Projections; DemographyUTAH Population Committee 2010-2016 Population Estimates.

Figure 4:
Share of Statewide Growth by County
2015-2065



Sources: Kem C. Gardner Policy Institute 2015-2065 State and County Projections; DemographyUTAH Population Committee 2010-2016 Population Estimates.

Figure 5:
Share of Utah Population by County
2065



Sources: Kem C. Gardner Policy Institute 2015-2065 State and County Projections; DemographyUTAH Population Committee 2010-2016 Population Estimates.

Table 5
Utah Population
2015-2065

Year	Total	Absolute Growth	Growth Rate	Median Age	Year	Total	Absolute Growth	Growth Rate	Median Age
2015	2,997,404			30.7	2041	4,520,678	56,728	1.3%	35.8
2016	3,054,806	57,402	1.9%	30.9	2042	4,577,247	56,569	1.3%	36.0
2017	3,123,607	68,801	2.3%	31.2	2043	4,633,568	56,321	1.2%	36.2
2018	3,193,415	69,809	2.2%	31.4	2044	4,689,532	55,965	1.2%	36.4
2019	3,260,765	67,349	2.1%	31.7	2045	4,745,057	55,525	1.2%	36.6
2020	3,325,425	64,661	2.0%	31.9	2046	4,800,120	55,062	1.2%	36.8
2021	3,389,467	64,042	1.9%	32.2	2047	4,854,748	54,628	1.1%	36.9
2022	3,449,985	60,518	1.8%	32.5	2048	4,909,089	54,341	1.1%	37.1
2023	3,507,364	57,379	1.7%	32.8	2049	4,963,211	54,122	1.1%	37.2
2024	3,562,226	54,861	1.6%	33.0	2050	5,017,232	54,022	1.1%	37.3
2025	3,615,036	52,811	1.5%	33.3	2051	5,071,236	54,004	1.1%	37.4
2026	3,669,342	54,306	1.5%	33.4	2052	5,125,126	53,890	1.1%	37.4
2027	3,723,441	54,099	1.5%	33.6	2053	5,178,833	53,707	1.0%	37.5
2028	3,778,152	54,711	1.5%	33.7	2054	5,232,327	53,495	1.0%	37.6
2029	3,833,308	55,155	1.5%	33.8	2055	5,285,767	53,439	1.0%	37.7
2030	3,889,310	56,003	1.5%	34.0	2056	5,339,307	53,540	1.0%	37.7
2031	3,946,122	56,811	1.5%	34.1	2057	5,393,004	53,696	1.0%	37.8
2032	4,004,069	57,948	1.5%	34.3	2058	5,446,925	53,921	1.0%	37.9
2033	4,062,343	58,273	1.5%	34.4	2059	5,501,088	54,163	1.0%	38.0
2034	4,120,490	58,148	1.4%	34.6	2060	5,555,423	54,335	1.0%	38.0
2035	4,178,317	57,826	1.4%	34.8	2061	5,609,943	54,519	1.0%	38.1
2036	4,235,865	57,548	1.4%	34.9	2062	5,664,555	54,613	1.0%	38.1
2037	4,293,208	57,344	1.4%	35.1	2063	5,719,145	54,590	1.0%	38.2
2038	4,350,268	57,060	1.3%	35.3	2064	5,773,599	54,454	1.0%	38.3
2039	4,407,155	56,887	1.3%	35.5	2065	5,827,810	54,210	0.9%	38.3
2040	4,463,950	56,795	1.3%	35.7					

Sources: Kem C. Gardner Policy Institute 2015-2065 State and County Projections; DemographyUTAH Population Committee 2010-2016 Population Estimates.

Table 6
Utah School Age Population (5-17 years of age)
2015-2065

Year	Total	Absolute Growth	Growth Rate	Year	Total	Absolute Growth	Growth Rate
2015	666,974			2041	836,467	10,039	1.2%
2016	676,459	9,486	1.4%	2042	846,377	9,910	1.2%
2017	684,631	8,172	1.2%	2043	855,987	9,610	1.1%
2018	693,269	8,638	1.3%	2044	865,150	9,163	1.1%
2019	699,962	6,693	1.0%	2045	873,751	8,601	1.0%
2020	705,631	5,669	0.8%	2046	881,707	7,956	0.9%
2021	708,542	2,911	0.4%	2047	888,990	7,283	0.8%
2022	712,480	3,938	0.6%	2048	895,633	6,643	0.7%
2023	715,336	2,856	0.4%	2049	901,673	6,040	0.7%
2024	717,354	2,019	0.3%	2050	907,179	5,506	0.6%
2025	718,210	856	0.1%	2051	912,247	5,068	0.6%
2026	719,678	1,468	0.2%	2052	916,968	4,722	0.5%
2027	721,751	2,073	0.3%	2053	921,447	4,479	0.5%
2028	724,517	2,766	0.4%	2054	925,810	4,363	0.5%
2029	729,200	4,683	0.6%	2055	930,229	4,419	0.5%
2030	736,180	6,980	1.0%	2056	934,856	4,627	0.5%
2031	742,719	6,540	0.9%	2057	939,808	4,952	0.5%
2032	750,959	8,239	1.1%	2058	945,186	5,378	0.6%
2033	759,942	8,983	1.2%	2059	951,062	5,876	0.6%
2034	770,334	10,392	1.4%	2060	957,453	6,392	0.7%
2035	779,026	8,692	1.1%	2061	964,370	6,917	0.7%
2036	787,890	8,864	1.1%	2062	971,800	7,430	0.8%
2037	797,104	9,214	1.2%	2063	979,706	7,906	0.8%
2038	806,637	9,533	1.2%	2064	988,034	8,328	0.9%
2039	816,444	9,807	1.2%	2065	996,717	8,683	0.9%
2040	826,429	9,984	1.2%				

Source: Kem C. Gardner Policy Institute 2015-2065 State and County Projections.

Table 7
Utah Working Age Population (18-64 Years of Age)
2015-2065

Year	Total	Absolute Growth	Growth Rate	Year	Total	Absolute Growth	Growth Rate
2015	1,770,860			2041	2,624,934	27,708	1.1%
2016	1,805,616	34,756	2.0%	2042	2,650,884	25,950	1.0%
2017	1,845,065	39,449	2.2%	2043	2,675,796	24,912	0.9%
2018	1,884,245	39,181	2.1%	2044	2,700,610	24,814	0.9%
2019	1,921,806	37,560	2.0%	2045	2,724,245	23,634	0.9%
2020	1,957,722	35,916	1.9%	2046	2,748,346	24,101	0.9%
2021	1,993,455	35,734	1.8%	2047	2,772,936	24,590	0.9%
2022	2,027,389	33,934	1.7%	2048	2,798,125	25,189	0.9%
2023	2,060,074	32,684	1.6%	2049	2,824,301	26,176	0.9%
2024	2,091,879	31,805	1.5%	2050	2,849,739	25,438	0.9%
2025	2,122,790	30,911	1.5%	2051	2,875,047	25,308	0.9%
2026	2,155,321	32,531	1.5%	2052	2,900,854	25,807	0.9%
2027	2,187,581	32,260	1.5%	2053	2,927,033	26,180	0.9%
2028	2,220,156	32,575	1.5%	2054	2,952,816	25,783	0.9%
2029	2,252,342	32,186	1.4%	2055	2,976,951	24,135	0.8%
2030	2,284,097	31,755	1.4%	2056	2,999,376	22,424	0.8%
2031	2,318,155	34,058	1.5%	2057	3,025,642	26,266	0.9%
2032	2,351,322	33,167	1.4%	2058	3,054,385	28,744	1.0%
2033	2,384,111	32,789	1.4%	2059	3,084,598	30,213	1.0%
2034	2,414,778	30,667	1.3%	2060	3,115,001	30,403	1.0%
2035	2,445,419	30,641	1.3%	2061	3,142,583	27,582	0.9%
2036	2,475,620	30,201	1.2%	2062	3,167,041	24,459	0.8%
2037	2,506,546	30,927	1.2%	2063	3,192,733	25,692	0.8%
2038	2,537,729	31,183	1.2%	2064	3,217,796	25,063	0.8%
2039	2,568,245	30,516	1.2%	2065	3,241,337	23,542	0.7%
2040	2,597,226	28,981	1.1%				

Source: Kem C. Gardner Policy Institute 2015-2065 State and County Projections.

Table 8
Utah Retirement Age Population (65+ years of age)
2015-2065

Year	Total	Absolute Growth	Growth Rate	Year	Total	Absolute Growth	Growth Rate
2015	305,273			2041	718,784	17,212	2.5%
2016	318,894	13,621	4.5%	2042	737,883	19,099	2.7%
2017	335,812	16,918	5.3%	2043	758,145	20,261	2.7%
2018	354,259	18,446	5.5%	2044	778,604	20,459	2.7%
2019	372,850	18,591	5.2%	2045	800,316	21,712	2.8%
2020	391,442	18,592	5.0%	2046	821,637	21,321	2.7%
2021	411,593	20,151	5.1%	2047	842,566	20,929	2.5%
2022	431,420	19,828	4.8%	2048	863,081	20,515	2.4%
2023	450,715	19,295	4.5%	2049	882,794	19,713	2.3%
2024	469,232	18,517	4.1%	2050	903,462	20,668	2.3%
2025	487,659	18,427	3.9%	2051	924,451	20,990	2.3%
2026	504,883	17,224	3.5%	2052	944,955	20,504	2.2%
2027	521,321	16,438	3.3%	2053	964,935	19,980	2.1%
2028	537,054	15,733	3.0%	2054	985,028	20,092	2.1%
2029	551,460	14,406	2.7%	2055	1,006,482	21,454	2.2%
2030	564,649	13,190	2.4%	2056	1,029,384	22,902	2.3%
2031	576,640	11,991	2.1%	2057	1,048,149	18,765	1.8%
2032	588,852	12,211	2.1%	2058	1,064,146	15,997	1.5%
2033	601,095	12,244	2.1%	2059	1,078,369	14,224	1.3%
2034	614,121	13,026	2.2%	2060	1,092,054	13,685	1.3%
2035	628,814	14,693	2.4%	2061	1,108,251	16,197	1.5%
2036	643,797	14,983	2.4%	2062	1,127,225	18,975	1.7%
2037	657,890	14,093	2.2%	2063	1,144,582	17,356	1.5%
2038	671,534	13,644	2.1%	2064	1,162,154	17,572	1.5%
2039	685,764	14,229	2.1%	2065	1,180,818	18,664	1.6%
2040	701,572	15,809	2.3%				

Source: Kem C. Gardner Policy Institute 2015-2065 State and County Projections.

Table 9
Utah Components of Population Change
2015-2065

Year	Births	Deaths	Natural Increase	Net Migration	Year	Births	Deaths	Natural Increase	Net Migration
2015	50,904	17,353	33,551	21,994	2041	69,138	31,201	37,937	18,791
2016	50,573	17,445	33,128	24,274	2042	69,432	31,922	37,510	19,059
2017	53,382	17,541	35,841	32,960	2043	69,755	32,632	37,123	19,198
2018	54,144	18,256	35,888	33,920	2044	70,100	33,328	36,772	19,192
2019	54,883	19,003	35,880	31,469	2045	70,478	34,003	36,475	19,049
2020	55,563	19,747	35,816	28,845	2046	70,893	34,654	36,239	18,823
2021	56,226	17,839	38,388	25,654	2047	71,349	35,287	36,062	18,566
2022	56,884	18,437	38,447	22,071	2048	71,845	35,909	35,937	18,405
2023	57,534	19,029	38,505	18,874	2049	72,392	36,506	35,885	18,236
2024	58,201	19,615	38,586	16,275	2050	72,985	37,082	35,903	18,119
2025	58,897	20,201	38,696	14,115	2051	73,623	37,642	35,981	18,023
2026	59,623	20,790	38,833	15,473	2052	74,307	38,194	36,113	17,777
2027	60,430	21,381	39,049	15,051	2053	75,031	38,741	36,291	17,416
2028	61,262	21,987	39,275	15,436	2054	75,785	39,284	36,500	16,994
2029	62,122	22,614	39,507	15,648	2055	76,557	39,828	36,730	16,710
2030	62,984	23,260	39,724	16,278	2056	77,343	40,377	36,966	16,574
2031	63,831	23,925	39,905	16,906	2057	78,139	40,938	37,201	16,496
2032	64,657	24,611	40,046	17,902	2058	78,933	41,518	37,414	16,507
2033	65,449	25,319	40,131	18,143	2059	79,717	42,123	37,595	16,569
2034	66,169	26,040	40,129	18,019	2060	80,485	42,755	37,730	16,605
2035	66,807	26,771	40,036	17,790	2061	81,229	43,421	37,809	16,711
2036	67,362	27,509	39,853	17,695	2062	81,944	44,119	37,825	16,787
2037	67,827	28,252	39,575	17,768	2063	82,624	44,850	37,774	16,816
2038	68,218	28,995	39,223	17,837	2064	83,266	45,617	37,650	16,804
2039	68,555	29,736	38,819	18,068	2065	83,868	46,416	37,452	16,758
2040	68,856	30,472	38,385	18,411					

Sources: Kem C. Gardner Policy Institute 2015-2065 State and County Projections; DemographyUTAH Population Committee 2010-2016 Population Estimates.

Table 10
Utah Total Employment
2015-2065

Year	Total	Absolute Growth	Growth Rate	Year	Total	Absolute Growth	Growth Rate
2015	1,863,692			2041	2,927,472	32,685	1.1%
2016	1,932,688	68,996	3.7%	2042	2,960,009	32,537	1.1%
2017	1,998,217	65,530	3.4%	2043	2,992,403	32,394	1.1%
2018	2,058,177	59,959	3.0%	2044	3,024,653	32,251	1.1%
2019	2,113,031	54,854	2.7%	2045	3,056,754	32,101	1.1%
2020	2,163,867	50,835	2.4%	2046	3,088,695	31,941	1.0%
2021	2,210,750	46,883	2.2%	2047	3,120,470	31,775	1.0%
2022	2,254,342	43,592	2.0%	2048	3,152,074	31,604	1.0%
2023	2,295,518	41,176	1.8%	2049	3,183,499	31,426	1.0%
2024	2,335,118	39,600	1.7%	2050	3,214,743	31,244	1.0%
2025	2,373,675	38,558	1.7%	2051	3,245,805	31,062	1.0%
2026	2,411,432	37,756	1.6%	2052	3,276,685	30,880	1.0%
2027	2,448,420	36,988	1.5%	2053	3,307,381	30,696	0.9%
2028	2,484,712	36,292	1.5%	2054	3,337,889	30,508	0.9%
2029	2,520,483	35,771	1.4%	2055	3,368,205	30,316	0.9%
2030	2,555,872	35,388	1.4%	2056	3,398,322	30,117	0.9%
2031	2,590,957	35,086	1.4%	2057	3,428,234	29,911	0.9%
2032	2,625,769	34,811	1.3%	2058	3,457,930	29,697	0.9%
2033	2,660,302	34,534	1.3%	2059	3,487,402	29,471	0.9%
2034	2,694,557	34,254	1.3%	2060	3,516,636	29,234	0.8%
2035	2,728,541	33,984	1.3%	2061	3,545,619	28,983	0.8%
2036	2,762,252	33,711	1.2%	2062	3,574,337	28,717	0.8%
2037	2,795,701	33,449	1.2%	2063	3,602,770	28,434	0.8%
2038	2,828,921	33,220	1.2%	2064	3,630,902	28,131	0.8%
2039	2,861,942	33,021	1.2%	2065	3,658,710	27,808	0.8%
2040	2,894,787	32,845	1.1%				

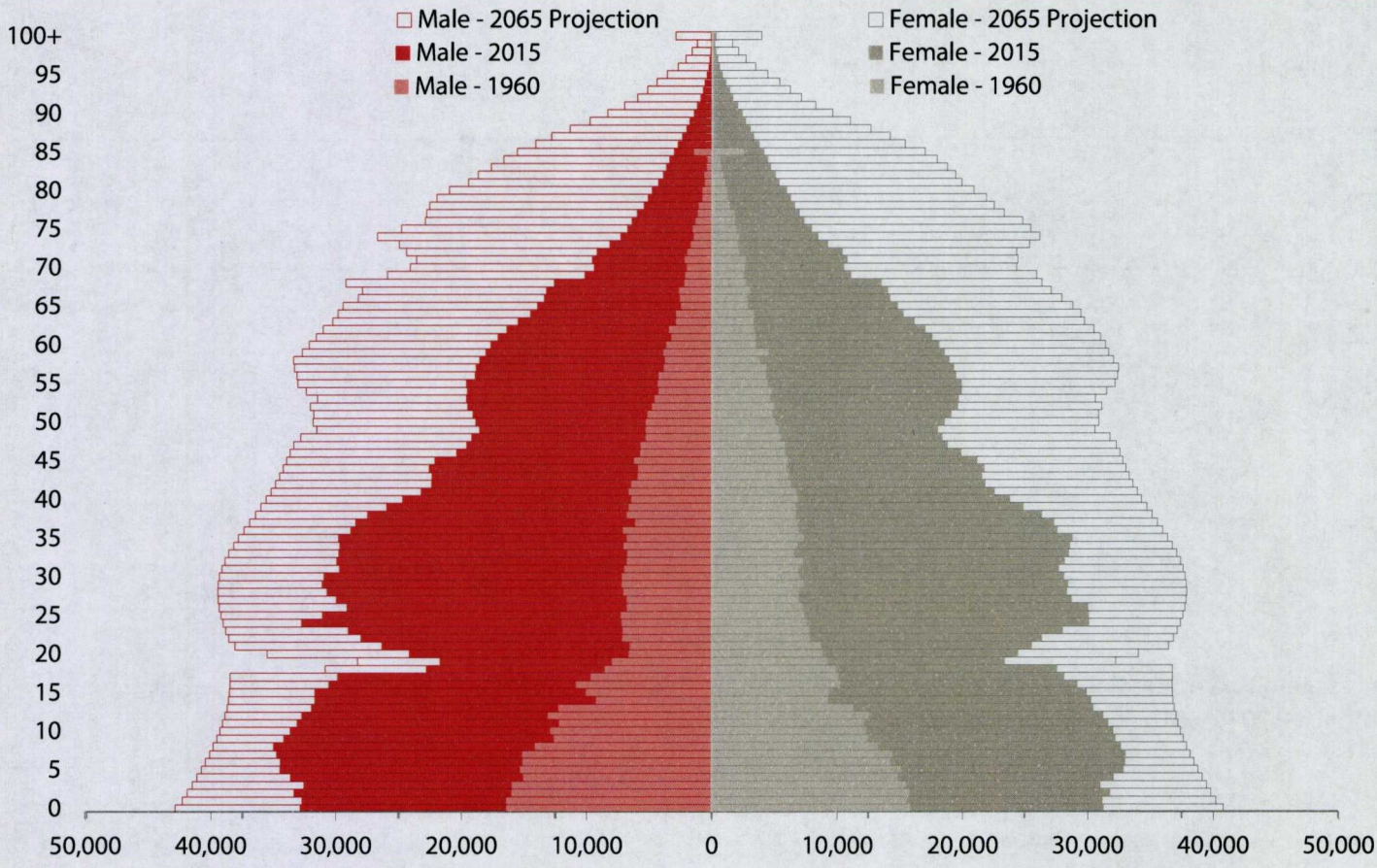
Source: U.S. Bureau of Economic Analysis Local Area Employment data.

Table 11
Utah Total Households and Average Household Size
2015-2065

Year	Total	Absolute Growth	Growth Rate	Average Size	Year	Total	Absolute Growth	Growth Rate	Average Size
2015	987,442			2.99	2041	1,664,539	24,196	1.5%	2.67
2016	1,011,905	24,463	2.5%	2.97	2042	1,688,209	23,670	1.4%	2.67
2017	1,039,980	28,075	2.8%	2.95	2043	1,711,483	23,274	1.4%	2.66
2018	1,069,114	29,134	2.8%	2.94	2044	1,734,756	23,273	1.4%	2.66
2019	1,097,501	28,387	2.7%	2.92	2045	1,757,619	22,863	1.3%	2.66
2020	1,125,044	27,543	2.5%	2.91	2046	1,780,277	22,657	1.3%	2.65
2021	1,153,177	28,133	2.5%	2.89	2047	1,802,676	22,399	1.3%	2.65
2022	1,180,155	26,978	2.3%	2.88	2048	1,825,099	22,423	1.2%	2.65
2023	1,206,243	26,088	2.2%	2.86	2049	1,847,852	22,754	1.2%	2.64
2024	1,231,542	25,299	2.1%	2.85	2050	1,870,806	22,954	1.2%	2.64
2025	1,256,295	24,753	2.0%	2.83	2051	1,893,840	23,034	1.2%	2.63
2026	1,281,399	25,104	2.0%	2.82	2052	1,916,951	23,110	1.2%	2.63
2027	1,306,435	25,036	2.0%	2.80	2053	1,940,444	23,493	1.2%	2.62
2028	1,331,723	25,288	1.9%	2.79	2054	1,964,548	24,104	1.2%	2.62
2029	1,357,131	25,408	1.9%	2.78	2055	1,989,132	24,584	1.3%	2.61
2030	1,382,797	25,666	1.9%	2.77	2056	2,013,292	24,161	1.2%	2.61
2031	1,409,046	26,249	1.9%	2.76	2057	2,037,308	24,016	1.2%	2.60
2032	1,435,827	26,781	1.9%	2.74	2058	2,061,648	24,340	1.2%	2.60
2033	1,462,740	26,913	1.9%	2.73	2059	2,086,297	24,649	1.2%	2.59
2034	1,489,601	26,861	1.8%	2.72	2060	2,111,304	25,007	1.2%	2.59
2035	1,515,728	26,126	1.8%	2.71	2061	2,136,644	25,340	1.2%	2.58
2036	1,541,141	25,414	1.7%	2.71	2062	2,161,332	24,688	1.2%	2.58
2037	1,566,339	25,198	1.6%	2.70	2063	2,185,757	24,426	1.1%	2.57
2038	1,591,194	24,855	1.6%	2.69	2064	2,210,140	24,383	1.1%	2.57
2039	1,615,947	24,752	1.6%	2.68	2065	2,234,094	23,954	1.1%	2.57
2040	1,640,342	24,396	1.5%	2.68					

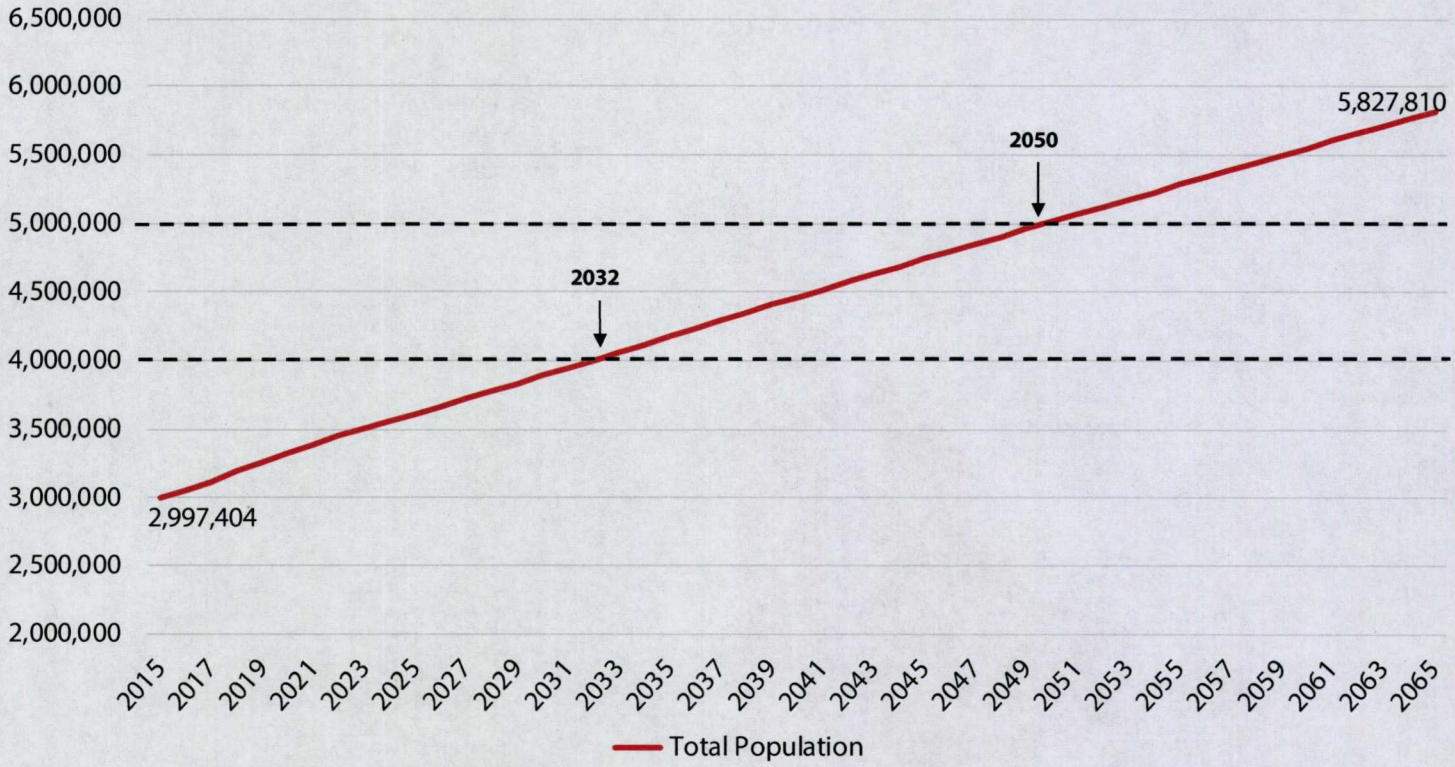
Source: Kem C. Gardner Policy Institute 2015-2065 State and County Projections.

Figure 6
Utah Population Pyramid
1960, 2015, and 2065



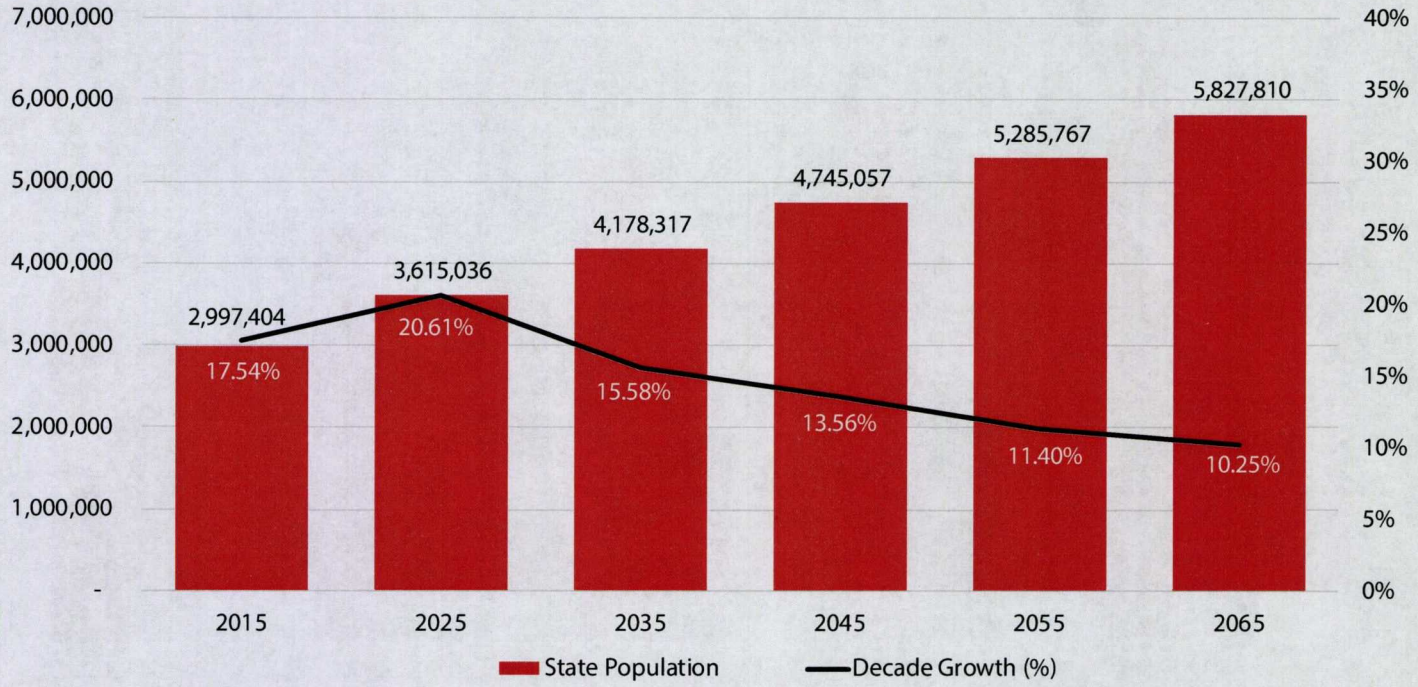
Sources: Kem C. Gardner Policy Institute 2015-2065 State and County Projections; U.S. Census Bureau Decennial Count Data.

Figure 7
Utah Total Population with Million Markers
2015-2065



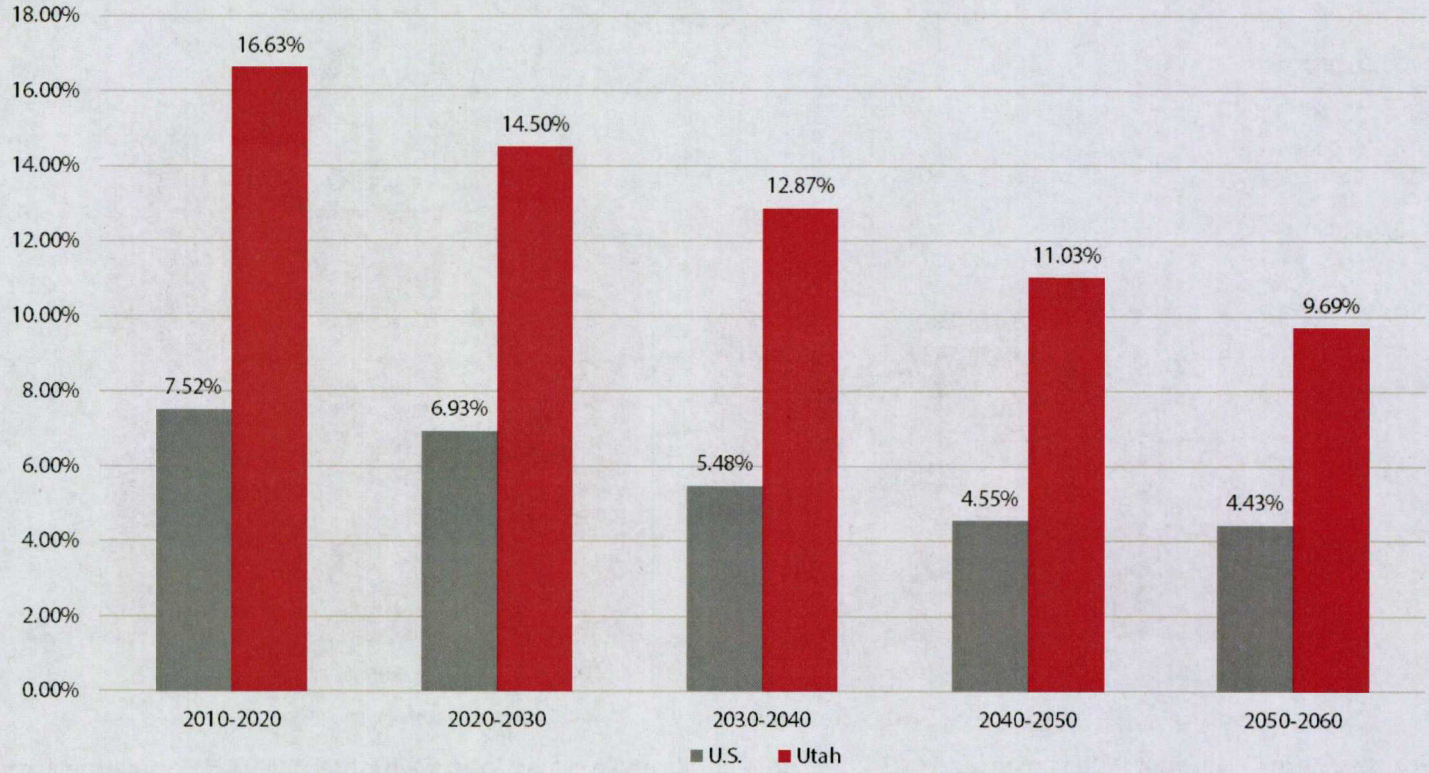
Source: Kem C. Gardner Policy Institute 2015-2065 State and County Projections; DemographyUTAH Population Committee 2010-2016 Population Estimates.

Figure 8
Utah Population and Growth Projections by Decade
2015-2065



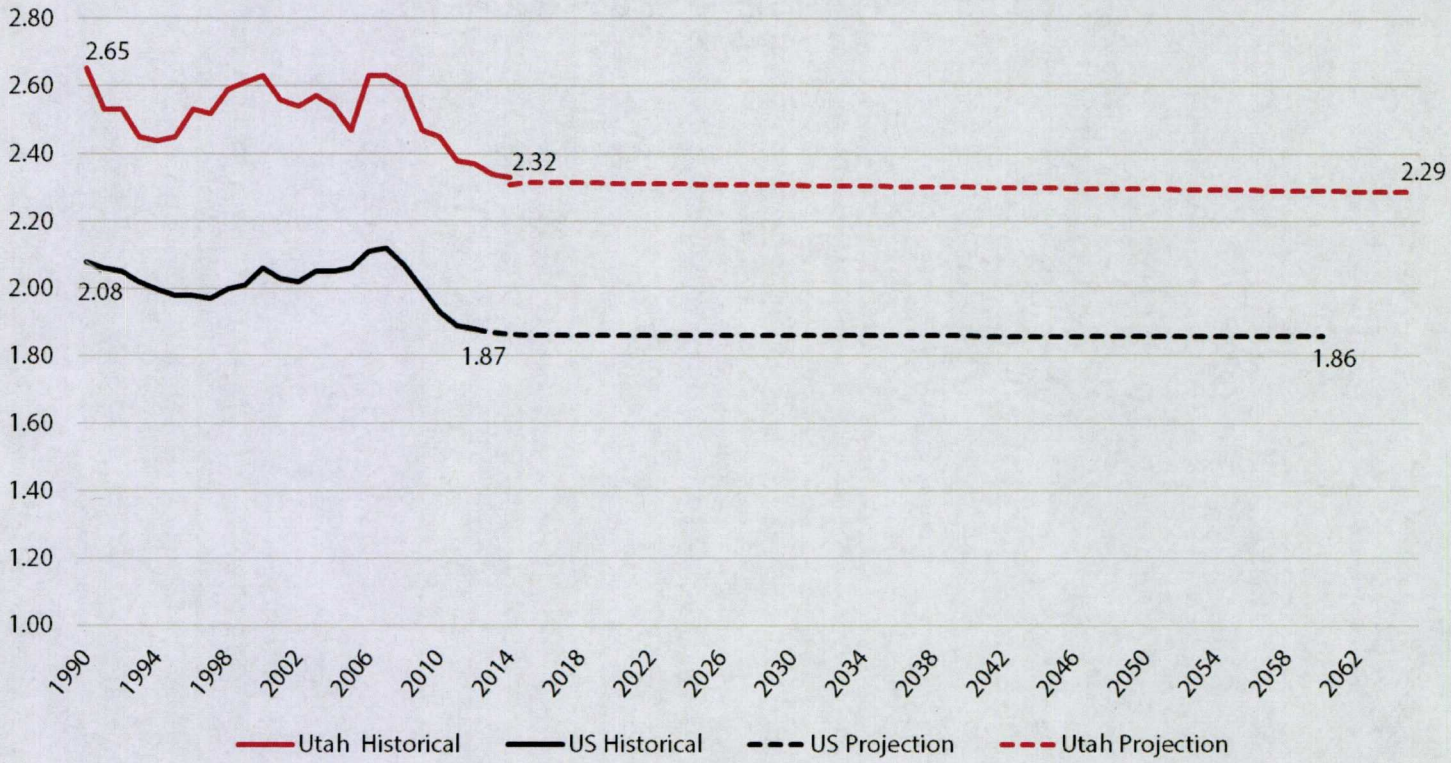
Sources: Kem C. Gardner Policy Institute 2015-2065 State and County Projections; DemographyUTAH Population Committee 2010-2016 Population Estimates.

Figure 9
Projected Percent Growth by Decade
Utah and U.S., 2010-2060



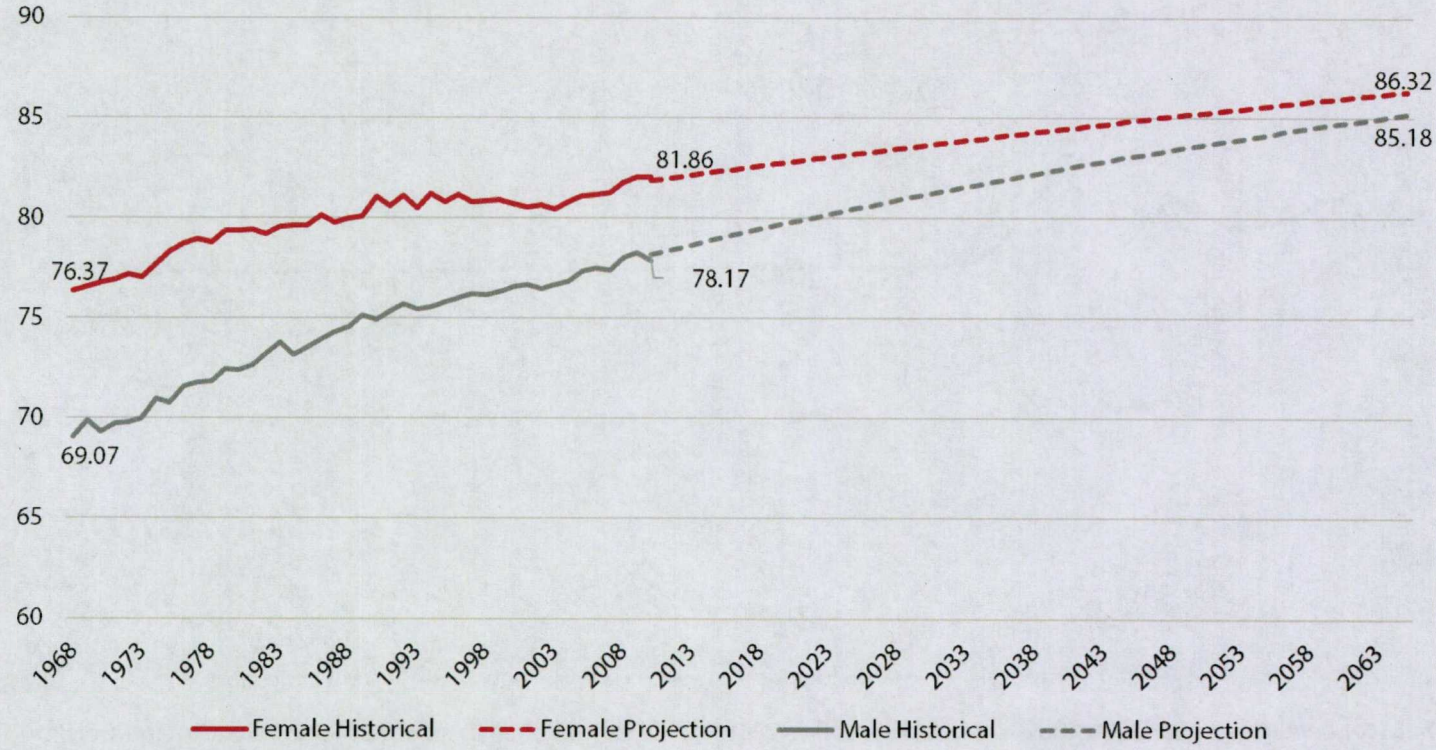
Sources: Census Bureau 2014-2060 National Projections; Kem C. Gardner Policy Institute 2015-2065 State and County Projections.

Figure 10
Historical and Projected Total Fertility Rates
Utah and U.S., 1990-2065



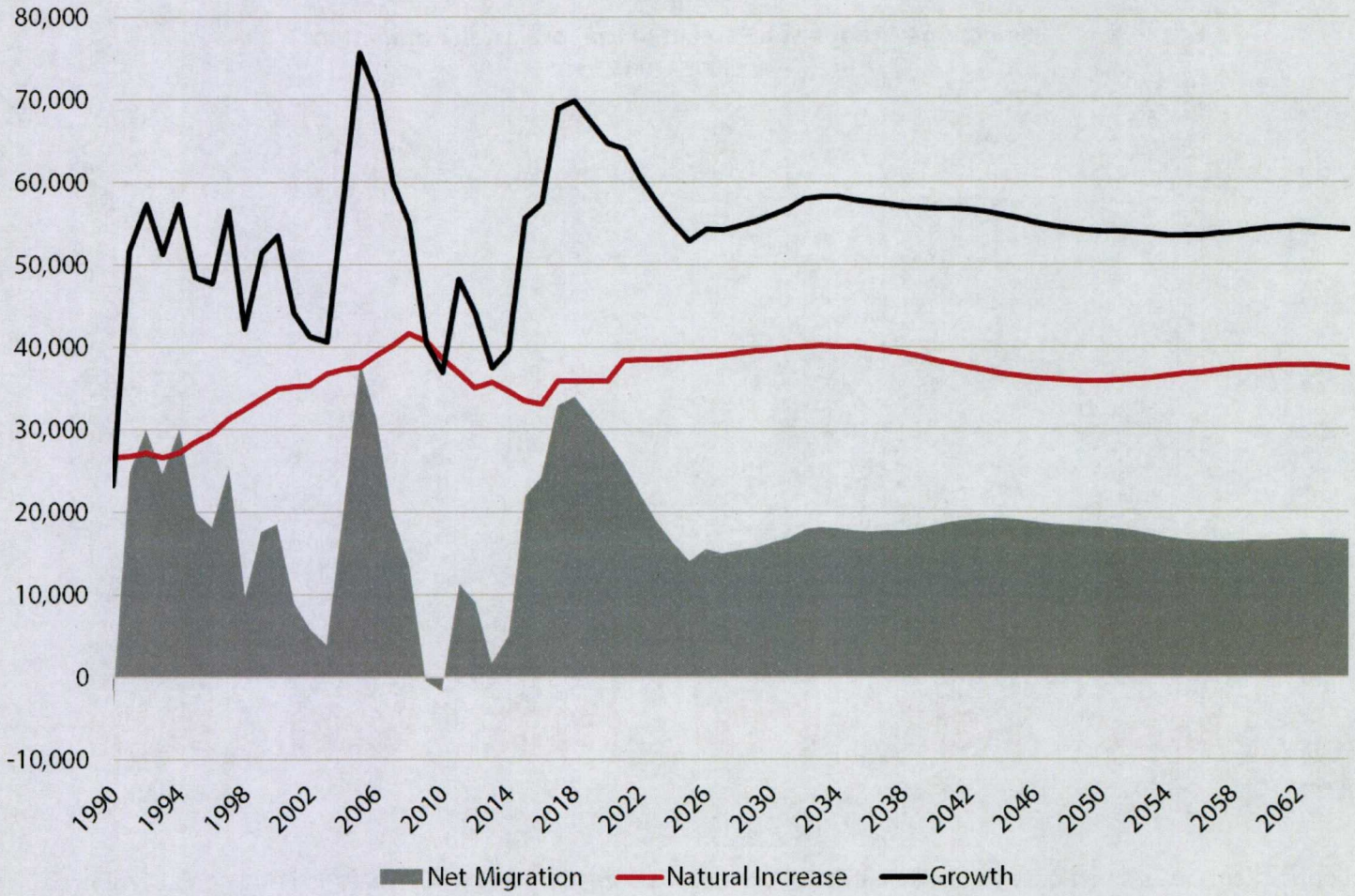
Source: Census Bureau 2014-2060 National Projections; Kem C. Gardner Policy Institute 2015-2065 State and County Projections; Utah Department of Health.

Figure 11
Utah Historical and Projected Life Expectancy
1968-2065



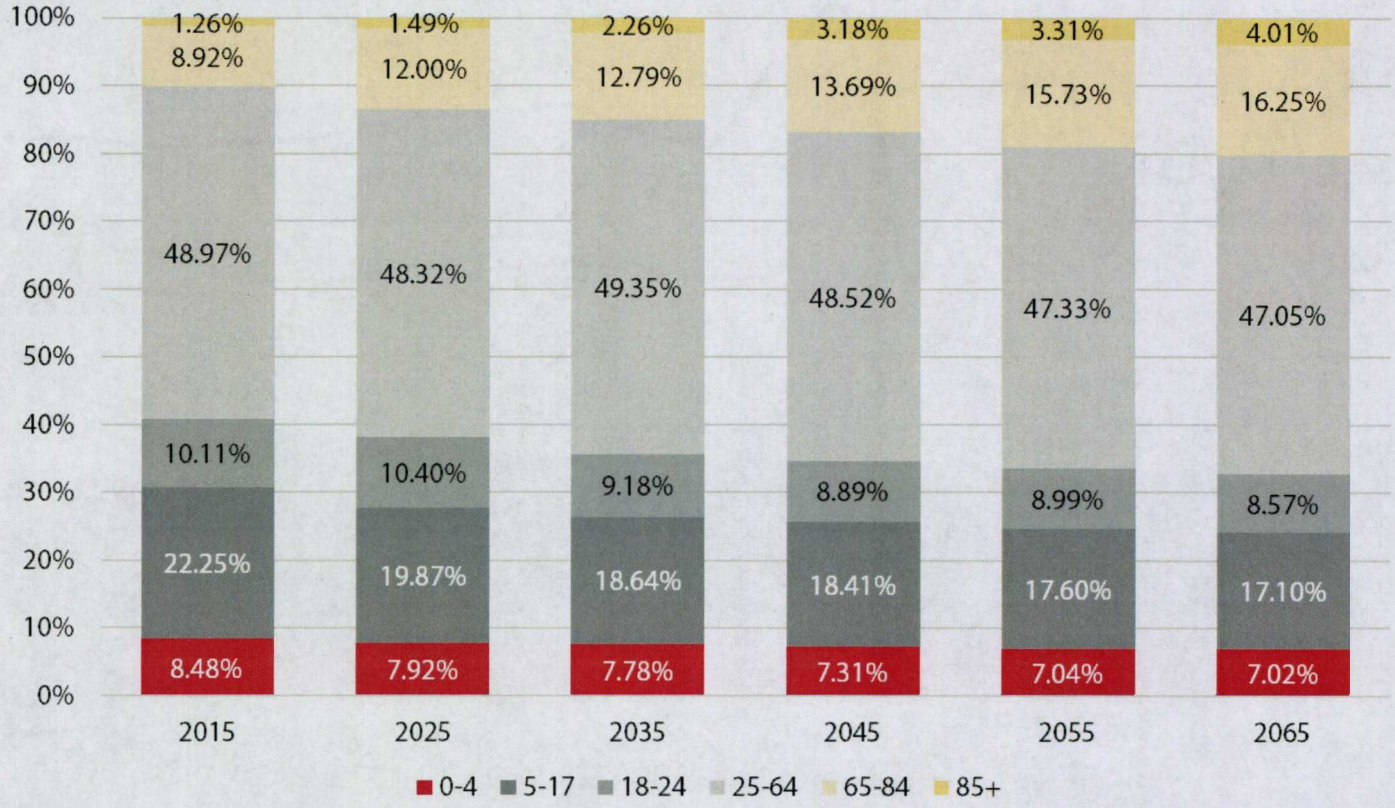
Sources: Kem C. Gardner Policy Institute 2015-2065 State and County Projections; Utah Department of Health.

Figure 12
Utah Historical and Projected Components of Change
1990-2065



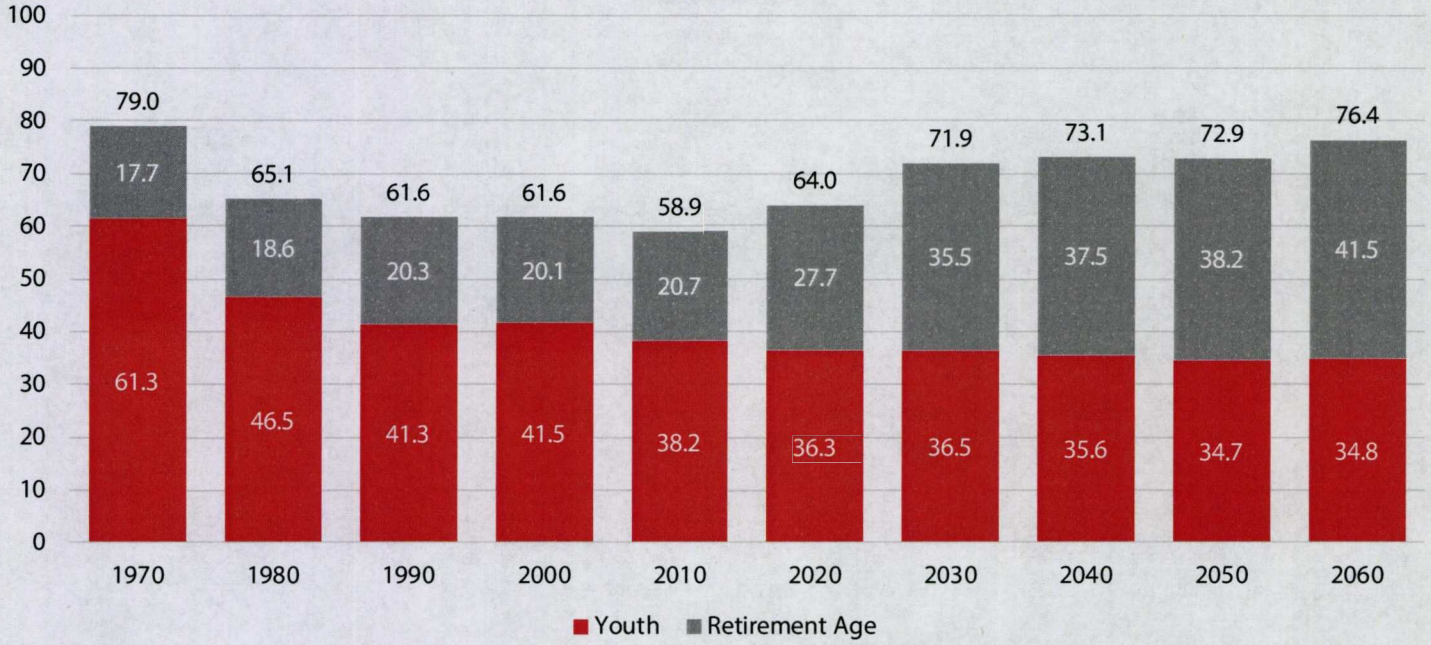
Sources: Kem C. Gardner Policy Institute 2015-2065 State and County Projections; Utah Population Estimates Committee Estimates (1990-2009); DemographyUTAH Population Committee 2010-2016 Population Estimates.

Figure 13
Select Age Groups as a Percent of the Total Utah Population
2015-2065



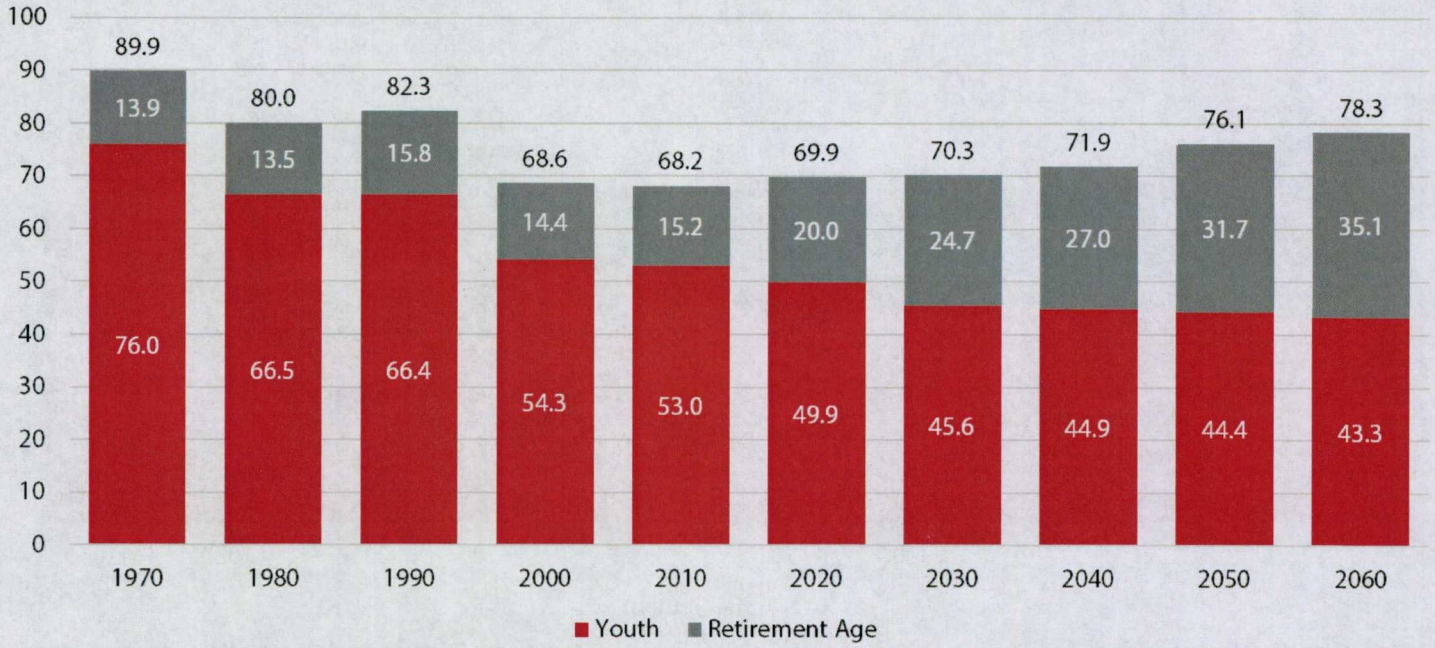
Source: Kem C. Gardner Policy Institute analysis of U.S. Census Bureau Decennial Census and Population Division data; Kem C. Gardner Policy Institute 2015-2065 State and County Projections.

Figure 14
U.S. Dependency Ratios
1970-2060



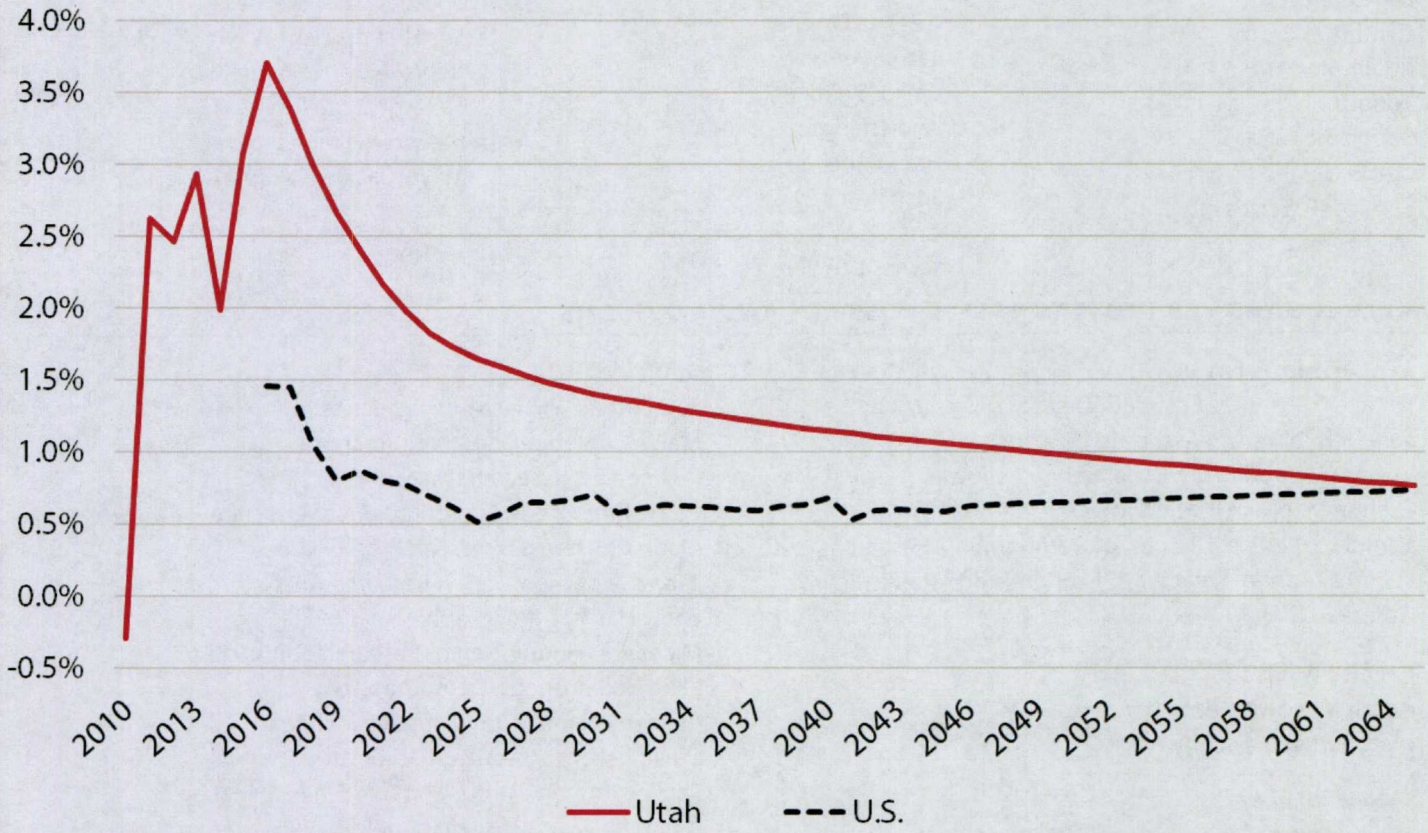
Source: Kem C. Gardner Policy Institute analysis of U.S. Census Bureau Decennial Census and Population Division data.
Note: Dependency Ratios are computed as the number of nonworking age persons per 100 working age (18-64 year old) persons in the population. Youth are less than 18 years old and retirement age is 65 years and older.

Figure 15
Utah Dependency Ratios
1970-2060



Source: Kem C. Gardner Policy Institute analysis of U.S. Census Bureau Decennial Census and Population Division data; Kem C. Gardner Policy Institute 2015-2065 State and County Projections.

Figure 16
Historical and Projected Total Employment Growth
Utah and U.S., 2010-2065



Sources: Kem C. Gardner Policy Institute 2015-2065 State and County Projections; U.S. Bureau of Economic Analysis & U.S. Bureau of Labor Statistics historical employment data.

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Appendix C

Referenced Calculations

Per Capita Solid Waste Generation

UT County		MSW, tons	C&D, tons
North Pointe CD Landfill			108,656
Santaquin CD Landfill			2,616
Intermountain		139,141	
Payson City CD Landfill		16,430	17,690
South Utah Valley Solid Waste District-Springville Transfer Station		134,067	
North Pointe Solid Waste District-Lindon Transfer Station		190,254	43,137
DCD-Orem Transfer Station		37,996	56,106
Total storage		517,887	228,205
Percent storage distribution		69.4%	30.6%
Grand total	**tons**		**746,092**
	lb		1,492,184,500
Served population		people	585,694
lbs waste per person per day			**7.0**

SL County		MSW, tons	C&D, tons
Trans-Jordan MSW Landfill		287,622.65	24,298.13
Salt Lake Valley SWMF MSW Landfill		344,863.00	
Salt Lake Valley SWMF-Transfer Station		179,805.00	
Allied Salt Lake Transfer Station		135,591.00	
View CD Landfill			98,202.31
Management CD Landfill			292,752.72
Total storage		947,882	415,253
Percent storage distribution		69.5%	30.5%
Grand total	**tons**		**1,363,135**
	lb		2,726,269,620
Served population		people	1,094,650
lbs waste per person per day			**6.8**

Landfill Life Estimation

IRL Volume/Capacity

landfill capacity	28,900,000	CY
	23,120,000	-20% for cover
capacity of waste	17,340,000	tonnage @ 1500 lbs/CY
growth	2.00%	

ref: https://documents.deq.utah.gov/waste-management-and-radiation-control/facilities/roc/DSHW-2017-002193.pdf

Year	2015			2018	2020
	msw	C&D	Total		
IRL	139,140	-	139,140		
North Pointe Solid Waste District	190,254	43,137	233,391	**247,677**	
TJC	287,623	24,298	311,921		**344,386**
Total 2015	617,017	67,435	684,452		
Total 2020			**755,690**		344,386

Scenario 1 - North Pointe in 2018 and TransJordan in 2020

Year	Calendar year	Current W to IRL	TJC	NP	total	Cumulative	remaining space
	2015	139,140			139,140	139,140	17,340,000
	2016	141,923			141,923	281,063	17,058,937
0	2017	144,761			144,761	425,824	16,914,176
1	2018	147,656		247,677	395,333	821,157	16,518,843
2	2019	150,610		252,630	403,240	1,224,397	16,115,603
3	2020	153,622	344,386	257,683	755,690	1,980,087	15,359,913
4	2021	156,694	351,273	262,836	770,804	2,750,892	14,589,108
5	2022	159,828	358,299	268,093	786,220	3,537,112	13,802,888
6	2023	163,025	365,465	273,455	801,945	4,339,056	13,000,944
7	2024	166,285	372,774	278,924	817,984	5,157,040	12,182,960
8	2025	169,611	380,230	284,503	834,343	5,991,383	11,348,617
9	2026	173,003	387,834	290,193	851,030	6,842,413	10,497,587
10	2027	176,463	395,591	295,997	868,051	7,710,464	9,629,536
11	2028	179,992	403,503	301,916	885,412	8,595,876	8,744,124
12	2029	183,592	411,573	307,955	903,120	9,498,996	7,841,004
13	2030	187,264	419,804	314,114	921,182	10,420,178	6,919,822
14	2031	191,009	428,200	320,396	939,606	11,359,784	5,980,216
15	2032	194,830	436,764	326,804	958,398	12,318,182	5,021,818
16	2033	198,726	445,500	333,340	977,566	13,295,748	4,044,252
17	2034	202,701	454,410	340,007	997,117	14,292,865	3,047,135
18	2035	206,755	463,498	346,807	1,017,060	15,309,925	2,030,075
19	2036	210,890	472,768	353,743	1,037,401	16,347,326	992,674
20	2037	215,108	482,223	360,818	1,058,149	17,405,475	(65,475)
21	2038	219,410	491,868	368,035	1,079,312	18,484,787	(1,144,787)
22	2039	223,798		375,395	599,193	19,083,980	(1,743,980)
	2040	228,274		382,903	611,177	19,695,157	(2,355,157)

Scenario 2

Year	Calendar year	Current W to IRL	TJC	NP	total	Cumulative	remaining space
	2015	139,140	-	-	139,140	139,140	17,340,000
	2016	141,923	-	-	141,923	281,063	17,058,937
0	2017	144,761			144,761	425,824	16,914,176
1	2018	147,656		-	147,656	573,481	16,766,519
2	2019	150,610		-	150,610	724,090	16,615,910
3	2020	153,622	-	-	153,622	877,712	16,462,288
4	2021	156,694	-	-	156,694	1,034,406	16,305,594
5	2022	159,828	-	-	159,828	1,194,234	16,145,766
6	2023	163,025	-	-	163,025	1,357,259	15,982,741
7	2024	166,285	-	-	166,285	1,523,544	15,816,456
8	2025	169,611	-	-	169,611	1,693,155	15,646,845
9	2026	173,003	-	-	173,003	1,866,158	15,473,842
10	2027	176,463	-	-	176,463	2,042,621	15,297,379
11	2028	179,992	-	-	179,992	2,222,614	15,117,386
12	2029	183,592	-	-	183,592	2,406,206	14,933,794
13	2030	187,264	-	-	187,264	2,593,470	14,746,530
14	2031	191,009	-	-	191,009	2,784,480	14,555,520
15	2032	194,830	-	-	194,830	2,979,309	14,360,691
16	2033	198,726	-	-	198,726	3,178,035	14,161,965
17	2034	202,701	-	-	202,701	3,380,736	13,959,264
18	2035	206,755	-	-	206,755	3,587,491	13,752,509
19	2036	210,890	-	-	210,890	3,798,381	13,541,619
20	2037	215,108	-	-	215,108	4,013,488	13,326,512
21	2038	219,410	-	-	219,410	4,232,898	13,107,102
22	2039	223,798	-	-	223,798	4,456,696	12,883,304
23	2040	228,274	-	-	228,274	4,684,970	12,655,030
24	2041	232,839	-	-	232,839	4,917,809	12,422,191
25	2042	237,496	-	-	237,496	5,155,305	12,184,695
26	2043	242,246	-	-	242,246	5,397,552	11,942,448
27	2044	247,091	-	-	247,091	5,644,643	11,695,357
28	2045	252,033	-	-	252,033	5,896,675	11,443,325
29	2046	257,074	576,448	439,877	1,273,398	7,170,073	10,169,927
30	2047	262,215	587,977	448,674	1,298,866	8,468,939	8,871,061
31	2048	267,459	599,736	457,648	1,324,843	9,793,782	7,546,218
32	2049	272,808	611,731	466,801	1,351,340	11,145,123	6,194,877
33	2050	278,265	623,966	476,137	1,378,367	12,523,489	4,816,511
34	2051	283,830	636,445	485,659	1,405,934	13,929,424	3,410,576
35	2052	289,507	649,174	495,373	1,434,053	15,363,477	1,976,523
36	2053	295,297	662,157	505,280	1,462,734	16,826,211	513,789
37	2054	301,203	675,400	515,386	1,491,989	18,318,199	(978,199)

Bayview Volume/Capacity

Cell	capacity	remarks
2	5,000,000 tons	Cell 2 stages 3 and 4
3	20,000,000 tons	2009 Permit Appliction and URS 2007 report
total	25,000,000 tons	

2015 MSW Tonnage

NUERA References:
https://www.utah.gov/pmn/files/240641.pdf
https://www.utah.gov/pmn/files/242513.pdf

SUVSWD	134,000		
North Pointe	247,700	34,800	initial 20% of NP in 2017
Weber	186,000		
Wasatch	125,000		2017 master plan and TS RFP
TJC	312,000		
Total	**1,004,700**	tons per year	
Annual increase	2.00%	annual	

Scenario 1 - Southern NUERA members (SUVSWD, TJC, NP)

Year	Calendar Year	SUVSWD	North Pointe	WIWMD	TJC	Weber Co	Annual	Cumulative Tonnage	Capacity Remaining
0	2017	139,414	34,800	-	-	-	174,214	174,214	24,825,786
1	2018	**142,202**	**252,654**	-	-	-	394,856	569,069	24,430,931
2	2019	145,046	257,707	-	-	-	402,753	971,822	24,028,178
3	2020	147,947	262,861	-	-	-	410,808	1,382,631	23,617,369
4	2021	150,906	268,118	-	-	-	419,024	1,801,655	23,198,345
5	2022	153,924	273,481	-	-	-	427,405	2,229,059	22,770,941
6	2023	157,002	278,950	-	-	-	435,953	2,665,012	22,334,988
7	2024	160,142	284,529	-	-	-	444,672	3,109,684	21,890,316
8	2025	163,345	290,220	-	-	-	453,565	3,563,249	21,436,751
9	2026	166,612	296,024	-	-	-	462,637	4,025,886	20,974,114
10	2027	169,944	301,945	-	-	-	471,889	4,497,775	20,502,225
11	2028	173,343	307,984	-	**403,605**	-	884,932	5,382,708	19,617,292
12	2029	176,810	314,143	-	411,677	-	902,631	6,285,339	18,714,661
13	2030	180,346	320,426	-	419,911	-	920,684	7,206,022	17,793,978
14	2031	183,953	326,835	-	428,309	-	939,097	8,145,120	16,854,880
15	2032	187,632	333,372	-	436,875	-	957,879	9,102,999	15,897,001
16	2033	191,385	340,039	-	445,613	-	977,037	10,080,036	14,919,964
17	2034	195,213	346,840	-	454,525	-	996,578	11,076,613	13,923,387
18	2035	199,117	353,777	-	463,616	-	1,016,509	12,093,122	12,906,878
19	2036	203,099	360,852	-	472,888	-	1,036,839	13,129,962	11,870,038
20	2037	207,161	368,069	-	482,346	-	1,057,576	14,187,538	10,812,462
21	2038	211,305	375,431	-	491,993	-	1,078,728	15,266,265	9,733,735
22	2039	215,531	382,939	-	501,832	-	1,100,302	16,366,568	8,633,432
23	2040	219,841	390,598	-	511,869	-	1,122,308	17,488,876	7,511,124
24	2041	224,238	398,410	-	522,106	-	1,144,754	18,633,630	6,366,370
25	2042	228,723	406,378	-	532,549	-	1,167,649	19,801,280	5,198,720
26	2043	233,297	414,506	-	543,200	-	1,191,002	20,992,282	4,007,718
27	2044	237,963	422,796	-	554,064	-	1,214,823	22,207,105	2,792,895
28	2045	242,722	431,252	-	565,145	-	1,239,119	23,446,224	1,553,776
29	2046	247,577	439,877	-	576,448	-	1,263,901	24,710,125	289,875
30	2047	252,528	448,674	-	587,977	-	1,289,179	25,999,304	-

Scenario 2 - Conservative, all NUERA members except Logan/Cache Co

Year	Calendar Year	SUVSWD	North Pointe	WIWMD	TJC	Weber Co	Annual	Cumulative Tonnage	Capacity Remaining
0	2017	**139,414**	**34,800**	-	-	-	174,214	174,214	24,825,786
1	2018	142,202	**252,654**	-	-	-	394,856	569,069	24,430,931
2	2019	145,046	257,707	**125,000**	-	-	527,753	1,096,822	23,903,178
3	2020	147,947	262,861	127,500	-	**186,000**	724,308	1,821,131	23,178,869
4	2021	150,906	268,118	130,050	-	189,720	738,794	2,559,925	22,440,075
5	2022	153,924	273,481	132,651	**358,390**	193,514	1,111,960	3,671,885	21,328,115
6	2023	157,002	278,950	135,304	365,558	197,385	1,134,199	4,806,084	20,193,916
7	2024	160,142	284,529	138,010	372,869	201,332	1,156,883	5,962,967	19,037,033
8	2025	163,345	290,220	140,770	380,326	205,359	1,180,021	7,142,988	17,857,012
9	2026	166,612	296,024	143,586	387,933	209,466	1,203,621	8,346,609	16,653,391
10	2027	169,944	301,945	146,457	395,691	213,656	1,227,694	9,574,303	15,425,697
11	2028	173,343	307,984	149,387	403,605	217,929	1,252,248	10,826,551	14,173,449
12	2029	176,810	314,143	152,374	411,677	222,287	1,277,293	12,103,843	12,896,157
13	2030	180,346	320,426	155,422	419,911	226,733	1,302,838	13,406,682	11,593,318
14	2031	183,953	326,835	158,530	428,309	231,268	1,328,895	14,735,577	10,264,423
15	2032	187,632	333,372	161,701	436,875	235,893	1,355,473	16,091,050	8,908,950
16	2033	191,385	340,039	164,935	445,613	240,611	1,382,583	17,473,632	7,526,368
17	2034	195,213	346,840	168,234	454,525	245,423	1,410,234	18,883,866	6,116,134
18	2035	199,117	353,777	171,598	463,616	250,332	1,438,439	20,322,305	4,677,695
19	2036	203,099	360,852	175,030	472,888	255,338	1,467,208	21,789,513	3,210,487
20	2037	207,161	368,069	178,531	482,346	260,445	1,496,552	23,286,065	1,713,935
21	2038	211,305	375,431	182,101	491,993	265,654	1,526,483	24,812,548	187,452
22	2039	215,531	382,939	185,743	501,832	270,967	1,557,012	26,369,560	-
23	2040	219,841	390,598	189,458	511,869	276,386	1,588,153	27,957,713	-
24	2041	224,238	398,410	193,247	522,106	281,914	1,619,916	29,577,629	-
25	2042	228,723	406,378	197,112	532,549	287,552	1,652,314	31,229,943	-
26	2043	233,297	414,506	201,055	543,200	293,303	1,685,360	32,915,303	-
27	2044	237,963	422,796	205,076	554,064	299,169	1,719,068	34,634,371	-
28	2045	242,722	431,252	209,177	565,145	305,153	1,753,449	36,387,820	-
29	2046	247,577	439,877	213,361	576,448	311,256	1,788,518	38,176,338	-
30	2047	252,528	448,674	217,628	587,977	317,481	1,824,288	40,000,626	-

Payson Volume/Capacity

Waste capacity	770,560	tons	https://deq.utah.gov/businesses/P/PaysonCity/PaysonClassVLandfill.htm
Estimated life	75	years	Reported in SC&A Evaluation Report
	10,274	annual tons 2004	
	50,000	Assumed additonal waste	

Year	Calendar Year	Payson	Other Waste	Annual	Cumulative Tonnage	Capacity Remaining
	2004	**10,274**	-	10,274	10,274	770,560
	2005	10,480	-	10,480	20,754	749,806
	2006	10,689	-	10,689	31,443	739,117
	2007	10,903	-	10,903	42,346	728,214
	2008	11,121	-	11,121	53,467	717,093
	2009	11,343	-	11,343	64,810	705,750
	2010	11,570	-	11,570	76,381	694,179
	2011	11,802	-	11,802	88,183	682,377
	2012	12,038	-	12,038	100,220	670,340
	2013	**18,350**	-	18,350	118,570	651,990
	2014	18,717	-	18,717	137,287	633,273
	2015	19,091	-	19,091	156,379	614,181
	2016	19,473	-	19,473	175,852	594,708
0	2017	19,863	-	19,863	195,714	574,846
1	2018	20,260	50,000	70,260	265,974	504,586
2	2019	20,665	50,000	70,665	336,639	433,921
3	2020	21,078	50,000	71,078	407,718	362,842
4	2021	21,500	50,000	71,500	479,218	291,342
5	2022	21,930	50,000	71,930	551,148	219,412
6	2023	22,369	50,000	72,369	623,516	147,044
7	2024	22,816	50,000	72,816	696,332	74,228
8	2025	23,272	50,000	73,272	769,604	956
9	2026	23,738	50,000	73,738	843,342	(72,782)
10	2027	24,212	50,000	74,212	917,555	(146,995)
11	2028	24,697	50,000	74,697	992,251	(221,691)
12	2029	25,191	50,000	75,191	1,067,442	(296,882)
13	2030	25,694	50,000	75,694	1,143,136	(372,576)

Travel Times

Central Corridor Study:

Data and Modeling Technical Memorandum FINAL 041817

Study contained travel time estimates for the I-15 segments, which are the inputs in the shaded cells.

Travel times for other segments were calculated based on approximate speeds

Locality	**AM travel**	miles	mph	**2014** minutes	**2050** minutes
Kaysville	Salt Lake	18		43.0	53.0
Salt Lake	Lehi	27		32.0	36.0
Lehi	Santaquin	36	60	36	36
Santaquin	**Bayview**	19	55	21	21
Travel, total miles		100	miles	132 min	146 min
Loading (load and unload time)				30 min	30 min
Travel + Loading				2.7 hr	2.9 hr
Round trip				**5.4 hr**	**5.9** hr

	PM travel	miles	**mph**	**2014** minutes	**2050** minutes
Kaysville	Salt Lake	18		34	38
Salt Lake	Lehi	27		61	75
Lehi	Santaquin	36	60	36	36
Santaquin	**Bayview**	19	55	21	21
Travel, total miles		100	miles	152 min	170 min
Loading (load and unload time)				30 min	30 min
Travel + Loading				3.0 hr	3.3 hr
Round trip				**6.1 hr**	**6.7 hr**

Travel Times

West Davis Corridor Model:

WDC Base Travel Demand Model

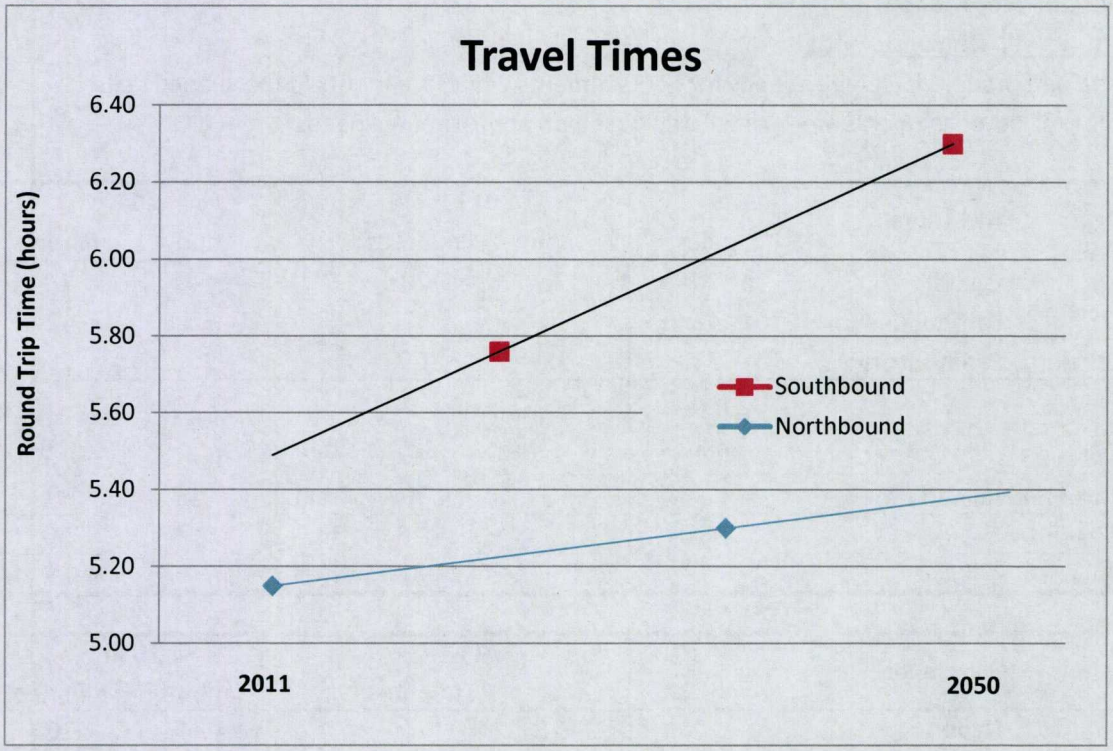
Study contained modeled average speeds for I-15 segments which are inputs in the shaded cells.

Travel times for other segments were calculated based on approximate speeds

Locality	**AM travel**	miles	**2011** mph	minutes		**2040** mph	minutes	
Kaysville	Ogden	20	59.7	20		56.0	21	
Ogden	Lampo Junction	42	60	42		60	42	
Lampo Junction	**Promontory**	38	35	65		35	65	
Total travel	**100**	miles		127	min		129	min
Loading (load and unload time)				30	min		30	min
Travel + Loading				2.6	hr		2.6	hr
Round trip				**5.2**	**hr**		**5.3**	**hr**

Locality	**PM travel**	miles	**2011** mph	minutes		**2040** mph	minutes	
Kaysville	Ogden	20	49.3	24		46.4	26	
Ogden	Lampo Junction	42	60	42		60	42	
Lampo Junction	**Promontory**	38	35	65		35	65	
Total travel	**100**	miles		131	min		133	min
Loading (load and unload time)				30	min		30	min
Travel + Loading				2.7	hr		2.7	hr
Round trip				**5.4**	**hr**		**5.4**	**hr**

Travel Times Estimates



Travel Times (see above Figure)

Year	Bayview	PPR
2011		5.15
2014	5.76	
2040		5.30
2050	6.30	

Average Travel Times

AM/PM travel	To Bayview, yr		To PPR, yr	
	2014	2050	2011	2040
AM travel, hrs	5.4	5.9	5.2	5.3
PM, travel, hrs	6.1	6.7	5.4	5.4
Average travel, hrs	5.7	6.3	5.3	5.4

Annual Travel Cost Projection

Year	2017		2050	
Locality	to Bayview	to Promontory	to Bayview	to Promontory
Roundtrip, hours	5.7	5.3	6.3	5.4
Cost per trip @$150/hour	$ 859.00	$ 797.00	$ 939.00	$ 810.00
$/ton at 40 tons per load	$ 21.48	$ 19.93	$ 23.48	$ 20.25
tons/year (Weber C + WIWMD)	311,000	311,000	597,814	597,814
Annual cost	$ 6,678,725	6,196,675	$ 14,033,683	$ 12,105,733
Annual cost difference		$ 482,050		**$ 1,927,950**
Percent difference (lower)				16%

Appendix D

NUERA Information Sheet- Bayview Landfill Project

NORTHERN UTAH ENVIRONMENTAL RESOURCE AGENCY

Information Sheet – Bayview Landfill Project

What is NUERA?

The Northern Utah Environmental Resource Agency (NUERA) was created as an interlocal cooperation entity under Utah Code Ann. § 11-13-101 et seq., by an agreement dated October 28, 2014. The members of NUERA are the City of Logan, Weber County, Wasatch Integrated Waste Management District, Trans-Jordan Cities, North Pointe Solid Waste Special Service District, and South Utah Valley Solid Waste District. NUERA is governed by a 12-member board consisting of two board members appointed by each of the six member entites. The Operations and Management (O&M) Committee of NUERA has six members consisting of the solid waste managers of each of the member entities. NUERA currently has no paid employees.

The Mission Statement of NUERA: To provide environmentally sound, cost effective solid waste disposal services for the communities of northern Utah while encouraging source reduction and recycling.

Who is on the Board of NUERA?

Bob Stevenson – NUERA Chair, Representing Wasatch Integrated Waste Management District
Dave Newton – NUERA Vice-Chair, Representing Trans-Jordan Cities
Kane Loader – NUERA Secretary-Treasurer, Representing Trans-Jordan Cities
Craig Peterson, Representing Logan City
Darrell Gibbons, Representing Logan City
Dale Goodman, Representing North Pointe Solid Waste Special Service District
Tim Irwin, Representing North Pointe Solid Waste Special Service District
Brandon Gordon, Representing South Utah Valley Solid Waste District
Wayne Parker, Representing South Utah Valley Solid Waste District
John Petroff, Representing Wasatch Integrated Waste Management District
Kerry Gibson, Representing Weber County
Matthew Bell, Representing Weber County

Who are the Operations and Management Committee Members?

Terry Ficklin – Chair, South Utah Valley Solid Waste District, tficklin@suvswd.org
Rodger Harper – Vice Chair, North Pointe Solid Waste Special Service District, rodger.np@gmail.com
Nathan Rich – Secretary, Wasatch Integrated Waste Management District, nathanr@wiwmd.org
Issa Hamud, Logan City, issa.hamud@loganutah.org
Mark Hooyer, Trans-Jordan Cities, markhooyer@transjordan.org
Kevin McLeod, Weber County, kmcleod@co.weber.ut.us

Logan City Environmental Department
153 North 1400 West
Building A
Logan, Utah 84321
(435) 716-9755
loganutah.org

North Pointe Solid Waste Special Service District
2000 West 200 South
Lindon, Utah 84042
(801) 225-8538
utahcountygarbage.org

South Utah Valley Solid Waste District
P.O. Box 507
Springville, Utah 84663
(801) 489-3027
suvswd.org

Trans-Jordan Cities
P.O. Box 95610
South Jordan, Utah 84095
(801) 569-8994
transjordan.org

Wasatch Integrated Waste Management District
P.O. Box 900
Layton, Utah 84041
(801) 614-5600
wasatchintegrated.org

Weber County Solid Waste
867 West Wilson Lane
Ogden, Utah 84401
(801) 399-8358
co.weber.ut.us

Bayview Landfill Project Overview

When the municipally-owned landfills in Davis and Salt Lake Counties reach the end their useful lives, the municipal solid waste will likely need to be transferred (put in large trailers and hauled by trucks) to a regional landfill. Both Weber County and North Pointe Solid Waste District no longer operate their own landfills, and currently transfer solid waste to a privately owned landfill in Tooele County. South Utah Valley Solid Waste Management District (SUVSWD) owns the Bayview Landfill, a large, fully-permitted landfill that is currently underutilized. NUERA has formed a Project that will allow NUERA members to purchase the Bayview Landfill from the SUVSWD. The negotiated purchase price of the Bayview Landfill by NUERA is $5,750,000.

Bringing additional waste into the Bayview Landfill from participating NUERA members will substantially reduce operating costs at that facility saving businesses and citizens of the SUVSWD service area millions of dollars over time by lowering the landfill operating costs. Allowing NUERA Members to jointly share ownership of the facility provides long term assurance (80+ years) to the other participating member communities that they will have a place to take their waste at reasonable rates that will be controlled directly by participating members. This project is a win-win partnership and a great example of local governments working together to provide a shared solution to a common challenge. The project will benefit our member cities, their citizens, and local business for years to come.

Background Information on the Solid Waste Industry along the Wasatch Front

Landfills are a high fixed-cost business because of the large capital expenditure required to open and maintain a landfill and the high cost of equipment used at landfills. Unit operating costs at a landfill can be substantially lowered by taking advantage of economies of scale. Landfills become very efficient at about 300,000 tons per year, and unit costs continue to decline up to about 500,000 tons per year. Individually, none of the participating entities in this project handles enough waste to reach these economies of scale. However, together, participating entities can deliver enough waste to a jointly owned landfill to drive unit costs very low, which benefits the ratepayers of all participating entities.

Utah currently has some of the lowest landfill dumping ("tipping") fees in the nation. Tipping fees along the Wasatch front currently range from $29/ton to $35/ton at the municipally operated landfills and transfer stations. Nationally, landfill tipping fees average around $45/ton and are commonly as high as $80/ton. Why are tipping fees in Utah so low? Because of the existence of municipally owned landfills with publicly posted disposal rates.

Solid waste disposal has historically been the responsibility of local government in Utah and across the Nation. Over the past 20 years, as many smaller County and City owned landfills have closed, the industry has shifted toward fewer and larger regional landfills, many owned by private companies. This shift has some benefits as larger landfills are more efficient to operate (lower cost) and also tend to employ the latest in environmental protections. However, in some markets when municipally owned landfills have been closed and replaced by only one or two privately owned landfills, tipping fees have soared. The Wasatch Front faces this potential problem as municipally owned landfills which began operation in the 1950's and 1960's are one by one running out of space.

Are privately owned and operated landfills bad? Of course not. They often provide valuable services at competitive pricing and should always be considered as an option. But we need to

remember that landfills owned by for-profit corporations are built and operated to generate profit for their shareholders or owners, as they should be. There is nothing wrong with a profit motive, we just need to be aware how it impacts the local market. Tipping fees at privately owned landfills are almost always negotiable, vary for each hauling customer and are typically not publically posted. A privately owned landfill can be used to create a vertically integrated hauling and disposal business, which may not accept waste from competing hauling companies.

The existence of at least one municipally owned landfill in a market with a publically posted, non-negotiable tipping fee, set by a board of elected or appointed officials who are directly accountable to the public, guarantees a competitive private sector hauling market. When no municipally owned landfill or transfer station is available in a market, the competitive independent haulers who do not own their own disposal capacity will cease to exist. NUERA's proposed Bayview Landfill Project will ensure a long term competitive market in the waste hauling sector. The cost of collection and hauling typically represents 60% of the total cost of solid waste disposal.

Are landfills operated by municipalities, counties, or special service districts bad? Of course not. Landfills are operated by public entities to provide services desired by their constituents under direct control of elected officials, and are highly regulated by the State and Federal Governments with transparency for the rate payer. Municipally-owned and operated landfills also typically provide a suite of services not provided by private landfills including; allowing residents and self-haul customers to deliver waste, providing recycling opportunities, providing green waste recycling and composting programs, accepting and properly disposing of Household Hazardous Waste, providing extended operating hours, providing education and outreach to schools and communities about waste and recycling issues, and operating renewable energy projects. These types of activities bring value to a solid waste management system, but may not provide the profits that a privately owned landfill requires.

Frequently Asked Questions (FAQ's)

1. **How did the Bayview Project Evolve?**

SUVSWD's Bayview Landfill currently handles 131,000 tons of waste per year, and operates at a cost per ton of $18.23. SUVSWD has been looking for ways to reduce the overall cost of their system, and released a request for proposals (RFP) in 2015 inviting proposals for privatization of the SUVSWD transfer station and/or the Bayview Landfill. Based upon a previously prepared Landfill Valuation Report completed by Cornerstone Environmental (January 2015), SUVSWD knew that one way to reduce unit costs was to increase tonnage received by the landfill.

SUVSWD received proposals from five private companies with interest in operating the Bayview Landfill. SUVSWD determined that none of the were in the best interests of the district, and postponed action on the private sector proposals received. NUERA and SUVSWD then began a conversation to determine if a mutually beneficial project could be developed. The project was developed using the financial evaluation provided by SUVSWD (the Cornerstone Report).

2. **Has an independent financial analysis of the project been performed?**

Yes, the NUERA Board approved funding for an independent analysis of anticipated project operating costs. This analysis was conducted by an independent solid waste engineering firm (IGES). IGES reviewed Cornerstone's assessments and projections and found them to be correct,

and perhaps overly-conservative. IGES also conducted their own independent financial analysis, the results of which were similar to those reached by the Cornerstone report. These results indicate that if the municipalities work together and bring sufficient waste to the Bayview Landfill, the participating entities can collectively enjoy substantially lower landfill tipping fees while also obtaining an ownership interest which provides for long-term security and control over future pricing. That evaluation has been extended to include evaluation of likely hauling costs for each of the participating entities.

3. Why wasn't private industry asked to provide a solution?

It was. South Utah Valley Solid Waste District received proposals for privatization of the SUVSWD transfer station and the Bayview Landfill. Five proposals were received and evaluated by SUVSWD and none were considered to be in the best interest of the District.

4. $5,750,000 is a lot of money. Do we really need to purchase the landfill?

The current purchase price of the landfill is $5,750,000, and the project will also require an additional $500,000 for initial operational requirements. Currently five members are considering participating in the landfill purchase, which makes the cost to each participating member $1,250,000. Purchasing a landfill with more than 80 years of disposal capacity at a unit cost of less than $0.20 per ton is an incredible opportunity. By comparison, there is a landfill currently under construction in Northern Utah that will provide approximately 80 years of capacity for a community of about 120,000 in population at a cost of approximately $10-$12 million. The risk of purchasing an existing, currently permitted and operating landfill like Bayview is very low, whereas attempting to site and build a new landfill would be farm more expensive and perhaps not politically possible.

5. Compared to what a new landfill costs, why is SUVSWD willing to sell the Bayview Landfill so cheaply?

SUVSWD realizes that they will save their citizen rate payers more money over time by sharing their landfill so that the operating costs can be substantially reduced for all participants, while yet preserving more-than-ample space for their own citizens for the next 80 years.

6. Has the public been left out of the process?

NUERA and each of the member entities are subject to the Utah Open and Public Meetings Act. All meetings of these entities have been properly noticed, recorded, and open to the public as required by law. This particular project has been openly discussed in NUERA meetings for well over a year. Several closed meeting sessions have been held within the past month, as is appropriately allowed by Utah law, in order to finalize negotiations of the real estate contract. The participation of each entity will require approval of their respective governing boards in a properly noticed open meeting.

7. Does this project violate anti-trust laws?

Anti-trust laws are designed to protect consumers from predatory business practices by ensuring that fair competition exists in the open-market. The same laws have long recognized that critical public infrastructure needs to be regulated to prevent private entities from developing monopolies which allow them to extract excess profits from public infrastructure without the benefit of a truly competitive market. This project does not prevent the private sector from building, owning, or

operating landfills in any way. The project does ensure protection to rate payers from the very-real threat of a privately-owned landfill monopoly.

8. If the private sector can, and in some cases already is providing these services, why do taxpayers need to pay for the government to compete with private industry?

Government has a duty to ensure that rate payers are getting the best value for the services that they request. Local government has always had the responsibility to provide environmentally sound and cost effective waste disposal, especially as solid waste is considered as critical local infrastructure. This project will lower waste disposal costs, including hauling costs, for the participating entities in the short term, and will provide direct control over rising costs in long term. By combining the waste streams of the member entities NUERA will be able to operate a very efficient landfill.

9. The Utah Taxpayers Association Says…

"In the greater Denver area, trash and landfills are nearly all privately owned and operated without government intervention or competition. Rates in Denver are much cheaper for landfill use than they are currently along the Wasatch Front. Clearly, the free market is doing its job in Denver, keeping prices at the correct level instead of government over inflating the market and raising prices on taxpayers."

It is true that the greater Denver area is served by a number of privately owned landfills. The following pricing was obtained from the following facilities through a few quick phone calls:

a) Buffalo Ridge Landfill: $37.50 per ton. (Owned and operated by Waste Management).
b) Denver Regional and Front Range Landfills: $46 per ton. (Owned and operated by Republic Waste Services).
c) North Weld Landfill: Minimum charge of $100 for 2 tons, then $38 per ton for additional tonnage. (Owned and operated by Republic Waste Services).

Based on this information, the statement given by the Utah Taxpayers appears to be false, and is misleading. Tipping fees in the greater Denver area appear to be about 25% higher than tipping fees along the Wasatch Front, not including transportation costs. Utah currently has only two competitive privately operated landfills. Local governments along the Wasatch Front have done a good job controlling waste disposal rates and protecting the interests of our citizen rate payers. Elected officials and citizen rate payers along the Wasatch Front should be pleased that local government is acting now to preserve a system that is already in-place locally, and that ensures that Utahns continue to pay some of the lowest waste disposal rates in the country far into the future.

10. Why is the Utah Taxpayers Association Concerned?

Why would the Utah Taxpayers Association choose to represent the interests of Republic Waste Services in this issue? Republic Waste Services is the second largest waste services company in the nation, which generated over $6 Billion in revenues in 2014 and returned $779 Million to shareholders during the same period. The Utah Taxpayers Association should be supporting the efforts of transparent government under local control to provide the best possible combination of service and cost.

Appendix E

Evaluation Report Findings and Response Matrix on Needs Assessment Report

Promontory Point Class V Landfill Needs Assessment Report, Evaluation Review Comment and Response Matrix

Evaluation of the Promontory Point Resources *Needs Assessment Report* (SC&A, July 10, 2017)	**Preparer**	HDR	**Date: 10/24/17**
Cover Letter from DWMRC July 12, 2017	**Commenting Organization**	**Utah Department of Environmental Quality, DWMRC**	

Item	Old Page/ Section	Comment	Relevant Information from Report	How Addressed
1.	Cover Letter, pg. 1	(Note: Information on cover letter identified potential data gaps which are also addressed under specific comments captured in report Appendix A. Therefore, see response to comments under Appendix A Section, below)	Appendix A, "Completeness of Statutory Requirements," provides more detailed information.	See responses #8 to #37
2.	Cover Letter, pg. 2	The report lacks analysis of trends in waste generation; recent reports show a decline in nonhazardous waste generation per capita in the United States.	Source information in Appendix B, "Data Validation"	See response to comments #38 to #52
3.	Cover Letter, pg. 2	A. The report lacks site-specific information about location, geology, and potential adverse environmental impact B. Other landfills, such as Intermountain Regional, include robust analysis of GHG emissions associated with transport to and from the facility in their permit application.	"Application for a Permit to Operate a Class V Landfill," 2011, https://deq.utah.gov/businesses/I/IntermountainRegional/docs/2011/02Feb/Intermountain_Regional_Landfill_Class_V_Permit_Application.pdf	A. The Class V Permit Application, Parts I, II, and appendices, prove compliance with location standards, contain the design features that are incorporated into the Promontory Point Landfill, and the operational approach to protect the environment. B. There are no significant environmental impacts at the site, the Class V designation would not change that, and any impact would be similar to any other modern landfills. See the information in the *Needs Assessment Report Addendum* for more information.
4.	Cover Letter, pg. 2	The report lacks mention of the implications of a court case that is pending (*Young Resources Limited Partnership v. Promontory Landfill & Promontory Point Land Resources, LLC*) that could affect the size of the facility.		The court case (160100006) was dismissed on July 26, 2016. The case would not have had an impact on the project because the operation boundary would have been adjusted and it would not have materially affected capacity.
5.	Cover Letter, pg. 2	The report lacks resumes and disclosure of any noncompliance issues for facility founders and all senior management.		Promontory Point Resources (Promontory, now Allos Environmental) provide biographies in the *Needs Assessment Report Addendum*. Promontory's management team does not have any major noncompliance issues. Resumes can be provided upon request.

Promontory Point Class V Landfill Needs Assessment Report, Evaluation Review Comment and Response Matrix

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6.	Cover Letter, pg. 2	The report lacks information on storage or treatment processes prior to landfilling, if the facility plans to offer these services.		Not applicable. Waste processing would primarily be handled by others. Promontory Point Landfill would dispose of residuals from recycling, organics and other material diversion programs. Promontory is willing to partner with municipalities and facilitate discussions about the feasibility of recovering organics, diverting recyclables, and other inert and reusable materials at the site. Given the size of the property, its remote location, and its proximity to rail, the Promontory site is suitable for long-term stockpiling of diverted materials and making them available for reuse.
7.	Cover Letter, pg. 2	Of the 25 items identified for data validation, 7 had sources provided and were confirmed. However, most claims did not have sources provided and required additional research. Several claims remained unconfirmed due to lack of needed information.	Appendix B, "Data Validation," provides more detailed information.	See responses under Appendix B comments #38 to #52. Some of the data provided are based on market knowledge given Promontory's and their consultant team's collective professional experience.
Response to Comments contained in SC&A Report Appendix A				
8.	Subsection 10A: Information on the source, quantity, and price charged for treating, storing, and disposing of potential nonhazardous solid or hazardous waste in the state and regionally	Promontory Point Resources, LLC (PPR) has identified numerous sources of municipal, industrial, and out-of-state waste; however, it has not provided detailed information on waste quantity. In addition, it does not provide projected pricing for each waste type. It does not present sufficient information on storage and treatment at the facility, if applicable.	The report's claim that "there are seven permitted Class I landfills within Salt Lake region that accept MSW within a fifty-mile radius of Ogden and two Class V landfills" is unsupported.	Table 2 in the *Needs Assessment Report* is a summary of existing landfills serving various geographies in relatively close proximity to Promontory. The wastes from these geographies are potential future sources for Promontory. As encroaching development and other pressures increase, the full capacities of these landfills might or might not be realized. Note that Table 1 in the SC&A report (Capacity of Select Utah Landfills) is misleading in that the assumptions (volume or airspace, annual waste, and annual waste growth) used in the capacity estimate are not provided.

Promontory Point Class V Landfill Needs Assessment Report, Evaluation Review Comment and Response Matrix

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Item	Old Page/ Section	Comment	Relevant Information from Report	How Addressed
9.	Subsection 10A: Information on the source, quantity, and price charged for treating, storing, and disposing of potential nonhazardous solid or hazardous waste in the state and regionally	Promontory Point Resources, LLC (PPR) has identified numerous sources of municipal, industrial, and out-of-state waste; however, it has not provided detailed information on waste quantity. In addition, it does not provide projected pricing for each waste type. It does not present sufficient information on storage and treatment at the facility, if applicable.	A. In terms of quantity, the report references two Class I landfills in the areas that are near capacity (unsupported).	SC&A's outreach confirmed the *Needs Assessment Report* assertion that Trans-Jordan and Wasatch Integrated landfills are approaching capacity. Uinta and Summit Counties, which are also close to capacity as reported by SC&A, offer relatively small volumes but could also use the Promontory Point Landfill.
10.	Subsection 10A: Information on the source, quantity, and price charged for treating, storing, and disposing of potential nonhazardous solid or hazardous waste in the state and regionally	Promontory Point Resources, LLC (PPR) has identified numerous sources of municipal, industrial, and out-of-state waste; however, it has not provided detailed information on waste quantity. In addition, it does not provide projected pricing for each waste type. It does not present sufficient information on storage and treatment at the facility, if applicable.	B. Claims of need for additional capacity are supported by population projections and per-person waste generation estimates (*supported*).	Comment noted. Local land use planners, transportation, state resource management, and regional water agencies are all planning for the substantial growth expected over the next few decades. Promontory Point Landfill offers a long-term solution for waste management in this rapidly growing area. Utah's population is projected to increase from about 3 million people in 2015 to about 5.8 million people in 2065; this is an increase of 2.8 million people. Northern Utah counties are projected to have 79% of the state's total population (5.8 million people) by 2065. Annual waste volumes in northern Utah will be 88% higher by 2065 (between 3.7 million and 5.0 million tons annually), nearly double 2015 volumes (2.0 million to 2.7 million tons). Additional landfill capacity is needed. Traffic on I-15 is expected to exceed its capacity in Salt Lake County by 2030. Even with planned improvements, travel times on I-15 going south through Salt Lake City is anticipated to increase dramatically in future years. So, for northern Utah communities, there are cost and emissions reduction benefits to using Promontory Point Landfill.

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Item	Old Page/ Section	Comment	Relevant Information from Report	How Addressed
11.	Subsection 10A: Information on the source, quantity, and price charged for treating, storing, and disposing of potential nonhazardous solid or hazardous waste in the state and regionally	Promontory Point Resources, LLC (PPR) has identified numerous sources of municipal, industrial, and out-of-state waste; however, it has not provided detailed information on waste quantity. In addition, it does not provide projected pricing for each waste type. It does not present sufficient information on storage and treatment at the facility, if applicable.	C. The report claims that "the facility has the capacity to provide all municipal solid waste disposal needs for Box Elder, Cache, Weber, Davis, and Morgan Counties for the next six hundred years" at the current levels of waste generation (*supported*).	Comment noted. As described, the size and location of the Promontory Point Landfill is a good long-term solution.
12.	Subsection 10A: Information on the source, quantity, and price charged for treating, storing, and disposing of potential nonhazardous solid or hazardous waste in the state and regionally	Promontory Point Resources, LLC (PPR) has identified numerous sources of municipal, industrial, and out-of-state waste; however, it has not provided detailed information on waste quantity. In addition, it does not provide projected pricing for each waste type. It does not present sufficient information on storage and treatment at the facility, if applicable.	D. Regarding price, the report indicates that the tip fee will be comparable to that of other Utah regional landfills, but the claim and figures provided are unsupported.	The fees charged to Promontory's customers are proprietary. The price can vary and will depend on many factors including waste type, total tonnage from a specific customer, and the delivery method. Tip fees from other regional, private commercial/ industrial landfills are unavailable because that pricing information is also proprietary. CalRecycle, in a 2015 report *Landfill Tipping fees in California*, also acknowledges the proprietary nature of the tipping fees. In its research, SC&A estimated disposal fees in CA are around $60/ton (Appendix B, Data Validation). This value is within the range of costs provided in the *Needs Assessment Report*. Promontory's operating costs would be similar to those of other Utah area landfills (with tipping fees from about $20.50/ton to about $30.50/ton) because amortized capital and mobile equipment costs, equipment operating costs, and labor costs would be similar for a similar level of operation. (See also response to comment #52, which compares an assumed volume for Promontory to existing northern Utah landfills.) With a proposed tipping fee lower than in CA, the value for a customer

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				to use Promontory is highly dependent on transportation costs. Rail haul cost will vary by location and market conditions. However, unlike truck haul which has a linear cost-per-time or a cost-per-distance relationship ($/mile), rail haul cost is not a function of the distance hauled but is priced on a "value of service" basis. This means that because truck transportation is available everywhere, if the rail transportation costs are marginally less than trucking, rail haul is a viable option. In this example, if rail haul costs are around $30 per ton, Promontory becomes an economically better disposal option. In addition, because railroads are sharing their track capacity assets among many shippers, they create a tiered pricing structure that prioritizes the richest shippers down to the poorest shippers. Once the capacity is exhausted, or "constrained", some shippers simply get priced out In HDR's experience, environmental remediation refuse and contaminated soil can generally pay the railroads well enough to overcome any capacity constraints and pricing pressures out of California, and many other western and central U.S. locations. Promontory can, therefore, offer tip fees that will make the overall disposal costs (including transportation costs) economical and allow customers to ship waste on rails to Promontory.
13.	Subsection 10A: Information on the source, quantity, and price charged for treating, storing, and disposing of potential nonhazardous	Promontory Point Resources, LLC (PPR) has identified numerous sources of municipal, industrial, and out-of-state waste; however, it has not provided detailed information on waste quantity. In addition, it does not provide	E. Other information on price includes generalizations of lower costs associated with the regionalization of waste disposal, the cost effectiveness of transfer stations, and a claim that	Regarding regionalization, landfill operating costs per ton are, in fact, driven down when more tonnage is received at one location because the amount of staffing and equipment needed to manage waste does not increase proportionally to increased waste volumes. For example, Bayview Landfill's operating cost, on a per ton basis, was forecast to

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	solid or hazardous waste in the state and regionally	projected pricing for each waste type. It does not present sufficient information on storage and treatment at the facility, if applicable.	PPR can provide a long-term solution with "pricing that is materially lower" to the "many" landfill owners and municipalities within the Salt Lake Region that are planning for end-of-life issues (unsupported).	decreased by about 13% by adding 34,800 tons, which is +26% to Bayview Landfill. This waste is coming from northern Utah County and is 20% of its total volume. (Draft NUERA Bayview Project Plan, 2016). This operating cost decrease can lower tipping fees and can affect the feasibility of adding transfer stations to a waste district's system in that overall cost increases of system changes are minimized. Promontory offers the same economy of scale benefit to northern Utah and other regional communities.
14.	Subsection 10A: A market analysis of the need for a commercial facility given existing and potential generation of nonhazardous solid or hazardous waste in the state and regionally	The report has not provided a market analysis since it does not present the quantities from each waste source and PPR's pricing information is lacking. It does present claims of need based on reduced supply and increased demand, as well as general benefits of the facility. Other information analyzing trends in waste generation and more in-depth review of other landfills is required.	A. The need for a commercial facility is based on claims of reduced supply, increased demand, and general benefits. In terms of supply, the report claims that "small, local landfills across the Western United States are closing and being replaced by transfer stations" (unsupported).	Regionalization is a well understood waste management trend as development pressures limit the ability to site new landfills close to population centers. See response to #13. Transfer stations and long-transfer hauls are a direct result. Commercialization or privatization is a preferred approach of many communities because of the power for market forces, and economies of scale, to keep disposal prices low and to minimize legacy environmental liability issues.
15.	Subsection 10A: A market analysis of the need for a commercial facility given existing and potential generation of nonhazardous solid or hazardous waste in the state and regionally	The report has not provided a market analysis since it does not present the quantities from each waste source and PPR's pricing information is lacking. It does present claims of need based on reduced supply and increased demand, as well as general benefits of the facility. Other information analyzing trends in waste	B. The report claims that there is increased demand for the facility based in part on estimates of waste generation per person per day and of population increase in the Northeastern Salt Lake Region (supported).	Comment noted. Local land use planners, transportation agencies, state agencies and local water districts are all planning for the substantial growth expended over the next few decades. Promontory offers a long-term solution for waste management. Moreover, transferring some waste to Promontory Point Landfill can extend the life of municipal landfills. This extension provides citizens several long-term benefits including a convenient location for self-haul customers, a location for processing

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		generation and more in-depth review of other landfills is required.		organics, a convenient (closer to demand) compost sales location, more capacity for CD waste disposal, and a location for disposing of recycling residuals that is closer to the recycling centers. In addition, closing landfills later allows districts to delay the expense and accrue more funds for other waste infrastructure improvements (transfer stations) and other waste-reduction and -diversion programs.
16.	Subsection 10A: A market analysis of the need for a commercial facility given existing and potential generation of nonhazardous solid or hazardous waste in the state and regionally	The report has not provided a market analysis since it does not present the quantities from each waste source and PPR's pricing information is lacking. It does present claims of need based on reduced supply and increased demand, as well as general benefits of the facility. Other information analyzing trends in waste generation and more in-depth review of other landfills is required.	C. Increased demand also comes from the potential to accept waste from outside Utah: "Cal-Haz." The report claims that there are currently only two landfills in California that accept "Cal-Haz" waste, and neither of them are served by rail (unsupported).	California non-hazardous waste is another potential source for Promontory Point Landfill. The landfill assumed a small percentage of the values reported for this special waste in its financially feasibility evaluation. Promontory has confirmed interest from industrial customers and remediation contractors. This provided Promontory's investor confidence in the market opportunity and allowed funding to materialize for the next phase of development. Allos is a partner in a northern California rail consolidation facility with a separate group of investors. This group of investors also sees Promontory Point Landfill as a financially viable disposal option. From Promontory's customers' perspective, transporting waste by rail has potential benefits from the standpoints of sustainability and carbon impacts (greenhouse gases or GHG) reduction, which most large industrial businesses track for purposes of managing their carbon output and reporting to their stakeholders. As of November 2017, over 1,300 businesses have voluntarily adopted GHG reduction targets in the 2015 Paris Agreement (*America's Pledge Phase 1 Report: States Cities, and Businesses in the United States are Stepping Up on Climate Action*, November 2017).

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				On average, rail is 4 times more efficient than trucking (*Freight Railroads Help Reduce Greenhouse Gas Emissions*, Association of American Railroads, April 2017). As mentioned in the *Needs Assessment Report*, most heavy process manufacturing facilities are rail–served, so rail-hauling waste provides a cost-effective alternative for transporting waste long distances. Given that large concentrations of industrial facilities are located throughout the western United States, Promontory Point Landfill is strategically located to provide disposal solutions to these industries due to its proximity to Union Pacific Railroad's main line. Promontory's state-of-the-art accounting system will facilitate real-time reporting for these customers who are committed to track, report, and reduce their company-wide GHG emissions.
17.	Subsection 10A: A market analysis of the need for a commercial facility given existing and potential generation of nonhazardous solid or hazardous waste in the state and regionally	The report has not provided a market analysis since it does not present the quantities from each waste source and PPR's pricing information is lacking. It does present claims of need based on reduced supply and increased demand, as well as general benefits of the facility. Other information analyzing trends in waste generation and more in-depth review of other landfills is required.	D. The report also states that "most" contaminated soil is designated as "Cal-Haz," but it does not provide exact figures (unsupported).	Low-level contaminated soil is another potential source for Promontory. It is impossible to speculate on the exact figure (potential total volume) of contaminated soil that could be delivered to Promontory. The same market forces of transportation and disposal costs will determine the most economical disposal location for this waste. EPA estimates that, on an acreage basis, 74% of Brownfields, 62% of Superfund, and 76% of RCRA Corrective Action sites are NOT ready for their anticipated use. This is equates to 16.4 million acres or 72% of EPA land clean-up programs still to be addressed. https://www.epa.gov/cleanups/measuring-progress-epas-land-cleanup-programs

Promontory Point Class V Landfill Needs Assessment Report, Evaluation Review Comment and Response Matrix

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18.	Subsection 10A: A market analysis of the need for a commercial facility given existing and potential generation of nonhazardous solid or hazardous waste in the state and regionally	The report has not provided a market analysis since it does not present the quantities from each waste source and PPR's pricing information is lacking. It does present claims of need based on reduced supply and increased demand, as well as general benefits of the facility. Other information analyzing trends in waste generation and more in-depth review of other landfills is required.	E. The report states that "large quantity generators in the Western United States generated more than 647,000 tons of RCRA hazardous waste" (supported).	Confirmation of a source for Promontory Point Landfill. Promontory has already secured Service Agreements from several industrial customers, contingent upon receipt of the Class V designation and construction of rail infrastructure at the site.
19.	Subsection 10A: A market analysis of the need for a commercial facility given existing and potential generation of nonhazardous solid or hazardous waste in the state and regionally	The report has not provided a market analysis since it does not present the quantities from each waste source and PPR's pricing information is lacking. It does present claims of need based on reduced supply and increased demand, as well as general benefits of the facility. Other information analyzing trends in waste generation and more in-depth review of other landfills is required.	F. Table 3 illustrates market opportunity for a rail-served Class V facility in Utah (unsupported).	The values in Table 3 were a result of Promontory's research and coordination with its potential customers. The values in the table are representative of one market opportunity for the Promontory Point Landfill. As described in response to comment #12, the rail served nature of the landfill expands the potential wasteshed but is not the sole driver.
20.	Subsection 10A: A market analysis of the need for a commercial facility given existing and potential generation of nonhazardous solid or hazardous waste in the state and regionally	The report has not provided a market analysis since it does not present the quantities from each waste source and PPR's pricing information is lacking. It does present claims of need based on reduced supply and increased demand, as well as general benefits of the facility. Other	G. The report also cites general benefits of the regionalization of waste disposal (reduced costs, greater efficiency, improved services, etc.) (unsupported).	See response to comment 13.

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		information analyzing trends in waste generation and more in-depth review of other landfills is required.		
21.	Subsection 10A: A market analysis of the need for a commercial facility given existing and potential generation of nonhazardous solid or hazardous waste in the state and regionally	The report has not provided a market analysis since it does not present the quantities from each waste source and PPR's pricing information is lacking. It does present claims of need based on reduced supply and increased demand, as well as general benefits of the facility. Other information analyzing trends in waste generation and more in-depth review of other landfills is required.	H. The report argues that the proposed facility is good for hazardous waste, including ash, and Table 4 summarizes the estimated coal ash along rail system (unsupported).	Promontory Point Landfill does not, and will not, accept hazardous waste. Ash is not categorized as a hazardous waste. Coal ash is managed under RCRA subtitle D (EPA 2016). Union Pacific is a major coal hauler and there are several coal fired power plants along its rail lines. Online map: http://arcg.is/0bGGvr. However, ash management decisions are dynamic and depend on, among a multitude of other considerations including coal combustion residual rules and effluent limitation guidelines, the anticipated decommission plans of the local utility. Many utility owners are currently weighing decision on capital investments. Some plant owners might decide to handle ash on site. However, others might decide that because they are close to retirement, the capital expense needed to meet current CCR regulations might not be justified for the short operating duration and so they will ship ash off site. As Union Pacific is a major rail hauler, there might be opportunities to back haul ash from these sites using the same equipment that currently returns to the coal source empty. Again, Promontory's needs assessment assumes a variety of non-hazardous industrial waste streams, not coal ash specifically.
22.	Subsection 10A: A market analysis of the need for a commercial facility given existing and potential	The report has not provided a market analysis since it does not present the quantities from each waste source and PPR's pricing information is lacking. It does present claims of	I. The report claims that coal-fired power plants will soon need off-site disposal, and Table 5 summarizes the locations and	See response to comment #21.

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	generation of nonhazardous solid or hazardous waste in the state and regionally	need based on reduced supply and increased demand, as well as general benefits of the facility. Other information analyzing trends in waste generation and more in-depth review of other landfills is required.	estimated tons of coal ash (unsupported).	
23.	Subsection 10A: A review of other existing and proposed commercial nonhazardous solid or hazardous waste facilities regionally and nationally that would compete for the treatment, storage, or disposal of the nonhazardous solid or hazardous waste;	The report identifies all facilities within a 50-mile radius except a new facility ("Logan City North Valley") set to open in Fall 2017. However, the report lacks a robust review of these local sites and presents little information on facilities outside the region. The main argument for the facility's competitive advantage is its proximity to rail; however, much of the evidence and rationale for that claim is unsupported in the report.	A. The report states that there are "seven permitted Class I landfills within Salt Lake region that accept MSW within a fifty-mile radius of Ogden and two Class V landfills" (unsupported).	A landfill with a Class I designation would not take the industrial or regional waste described in the *Needs Assessment Report*. Information on capacity, tipping fees, and environmental compliance record of other commercial facilities is not available because of the proprietary nature of that information.
24.	Subsection 10A: A review of other existing and proposed commercial nonhazardous solid or hazardous waste facilities regionally and nationally that would compete for the treatment, storage, or disposal of the nonhazardous solid or hazardous waste;	The report identifies all facilities within a 50-mile radius except a new facility ("Logan City North Valley") set to open in Fall 2017. However, the report lacks a robust review of these local sites and presents little information on facilities outside the region. The main argument for the facility's competitive advantage is its proximity to rail; however, much of the evidence and rationale for that claim is unsupported in the report.	B. The report states that "within the Greater Salt Lake Region, there are two Class V landfills that could compete for waste volumes from outside the State of Utah; Salt Lake SWM Landfill and the Wasatch Regional Landfill." However, it states that the PPR facility would have an advantage	The report incorrectly identified the Salt Lake Valley Landfill as a Class V facility. The Wasatch Regional Landfill and Intermountain Regional are the two Class V landfills in northern Utah which are not rail served and, therefore, receive mainly MSW from the Wasatch Front.

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			because one of these landfills does not actively seek these types of waste and the other is not along rail lines (unsupported).	
25.	Subsection 10A: A review of other existing and proposed commercial nonhazardous solid or hazardous waste facilities regionally and nationally that would compete for the treatment, storage, or disposal of the nonhazardous solid or hazardous waste;	The report identifies all facilities within a 50-mile radius except a new facility ("Logan City North Valley") set to open in Fall 2017. However, the report lacks a robust review of these local sites and presents little information on facilities outside the region. The main argument for the facility's competitive advantage is its proximity to rail; however, much of the evidence and rationale for that claim is unsupported in the report.	C. The report states that two of the Class I landfills are near capacity and that "many landfill owners and municipalities within the Salt Lake Region are currently planning for end of life issues such as closure and long-term monitoring costs, waste disposal alternatives, increasing transport costs, future disposal capacity, and regulatory oversight" (unsupported).	Master planning is an ongoing exercise for waste districts. In May 2017, Wasatch Integrated Waste Management District's Administrative Control Board approved an Update to its Integrated Solid Waste Master Plan which identified the need to implement a transfer station following closure of Wasatch's Davis Energy Recovery Facility, which happened early 2017 (GBB 2017). Trans Jordan has prepared siting and system-wide cost studies to evaluate the addition of transfer stations for the past 15 years (HDR 1998, 2001, 2006 and 2010). For context, Logan City started planning for its solid waste management future in 1999. The Waste Disposal Alternatives Study (HDR 2000) evaluated options following closure of the Logan Landfill. It has taken 18 years of citizen outreach, local approvals, and state authorizations to break ground on the Logan North Valley Landfill. The rapid local growth has made solid waste master planning very important, and some entities are behind in their planning efforts. Elected officials and solid waste management leaders like to have options available to address waste management needs long term. Promontory would be a viable cost-effective, long-term option as a Class V because the regional waste would subsidize the disposal cost for local MSW currently going to Class I landfills.

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26.	Subsection 10A: A review of other existing and proposed commercial nonhazardous solid or hazardous waste facilities regionally and nationally that would compete for the treatment, storage, or disposal of the nonhazardous solid or hazardous waste;	The report identifies all facilities within a 50-mile radius except a new facility ("Logan City North Valley") set to open in Fall 2017. However, the report lacks a robust review of these local sites and presents little information on facilities outside the region. The main argument for the facility's competitive advantage is its proximity to rail; however, much of the evidence and rationale for that claim is unsupported in the report.	D. The report does not mention any specific facilities beyond the immediate region or proposed sites. Its main argument for competitive advantage is the proximity to rail.	With Cache County's move to the North Valley Landfill, all facilities are assumed to meet current siting and landfill design standards. Similarly other regional commercial landfills are assumed to be in compliance with their respective State environmental regulations. Therefore, the main competitive advantage for special waste to Promontory is the cost effectiveness of the rail served facility. See also response to comment #23 regarding the proprietary nature of other facilities. See response to comment #12 regarding rail. See also the *Needs Assessment Report Addendum* for more information.
27.	Subsection 10A: A review of other existing and proposed commercial nonhazardous solid or hazardous waste facilities regionally and nationally that would compete for the treatment, storage, or disposal of the nonhazardous solid or hazardous waste;	The report identifies all facilities within a 50-mile radius except a new facility ("Logan City North Valley") set to open in Fall 2017. However, the report lacks a robust review of these local sites and presents little information on facilities outside the region. The main argument for the facility's competitive advantage is its proximity to rail; however, much of the evidence and rationale for that claim is unsupported in the report.	E. The report states that the facility will be "the only major Class I, Subtitle D landfill located directly adjacent to the main trunk of the Union Pacific Railroad line," allowing it to service areas beyond Utah in addition to the commercial sector (unsupported).	In the context of the application for a Class V permit which would allow Promontory Point Landfill to serve areas beyond Utah, the *Needs Assessment Report* incorrectly identified the Promontory facility as a Class I facility. The *Needs Assessment Report Addendum* clarifies the service area with the landfill designated as Class V. However, Promontory Point Landfill is a Class I facility, and, as a Class I, it can serve areas in Utah when it secures contracts with local governments or special service districts. With the rail infrastructure investment at Promontory, some communities and some pending special remediation project managers (prison relocation and airport expansion) could decide to rail-haul waste to Promontory. Some districts might realize that rail hauling is feasible. Rail hauling in-state waste would reduce truck traffic, reduce fuel consumption, and reduce air pollutant emissions.

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28.	Subsection 10A: A review of other existing and proposed commercial nonhazardous solid or hazardous waste facilities regionally and nationally that would compete for the treatment, storage, or disposal of the nonhazardous solid or hazardous waste;	The report identifies all facilities within a 50-mile radius except a new facility ("Logan City North Valley") set to open in Fall 2017. However, the report lacks a robust review of these local sites and presents little information on facilities outside the region. The main argument for the facility's competitive advantage is its proximity to rail; however, much of the evidence and rationale for that claim is unsupported in the report.	F. In addition to accepting "Cal-Haz" and ash as previously mentioned, the report claims that the facility will provide "turn-key disposal solutions for contaminated soil" (unsupported).	See responses to comments #17, #19, and #21.
29.	Subsection 10A: A review of other existing and proposed commercial nonhazardous solid or hazardous waste facilities regionally and nationally that would compete for the treatment, storage, or disposal of the nonhazardous solid or hazardous waste;	The report identifies all facilities within a 50-mile radius except a new facility ("Logan City North Valley") set to open in Fall 2017. However, the report lacks a robust review of these local sites and presents little information on facilities outside the region. The main argument for the facility's competitive advantage is its proximity to rail; however, much of the evidence and rationale for that claim is unsupported in the report.	G. The report presents the average disposal price for soils or solids in different regions of the United States (supported).	Comment noted
30.	Subsection 10B: The need in the state for the additional capacity for the management of nonhazardous solid or hazardous waste	The report lacks information to demonstrate the need for additional capacity.	The report establishes need based on the growing local population and the facility's ability to take commercial and out-of-state waste (unsupported).	See the response to comment #10. Annual waste volumes in northern Utah will be 88% higher by 2065 (between 3.7 million and 5.0 million tons annually), nearly double 2015 volumes (2.0 million to 2.7 million tons). The Promontory Point Landfill has local support and has received conditional use permit approval. The Class V designation (commercial

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				landfill) significantly benefits Box Elder County. The County Commission approved an amendment to Chapter 3-8 Land Use Management & Development Code to specify a Solid waste Zone (Ordinance 442). Chapter 3-8 also specifies Host Fees for the County. These host fees will total $2.00 per ton starting in 2019 for Promontory. Box Elder is a large rural county in northwest Utah. It has a small population of 42,910 of which 9,585 people (18%) live in unincorporated portions of the County and it has very small tax base. According to their 2016 budget, the County had total revenue of about $8,103,000 from all sources. With expenditures of $9,706,620 Box Elder County was faced with a funding gap of $1,603,629. Promontory Point Landfill offers Box Elder County the ability to close this gap with host fees and taxes. Box Elder County commission a study by the University of Utah's Gardner Policy institute to look at the economic and fiscal benefits of the Promontory Point Landfill. In addition to host fees, the economic impact generated by the Promontory Point Landfill equates to a 15-year (2017 to 2031) net present value of $31,000,000 in new net local revenues and $12,500,000 in new State revenues. In the context of Box Elder's funding gap, landfill related transactions will pay $906,000 in local taxes initially and growing to 2,200,000 in year 2031. The Utah Legislature recognized the "favorable economic impact on Box Elder County in the form of new permanent jobs and host fees" and approved House Resolution 20 in 2016 that authorized the commercial facility in accordance with Utah Code 19-6-108 part (3)(c)(B)

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31.	Subsection 10B: The energy and resources recoverable by the proposed facility;	Although the report presents some information on methane recovery and the facility's ability to "store" certain wastes for re-use, it should provide additional information on storage, treatment, and potential methane generation.	The report states that the facility will be primarily "powered by renewable energy, designed to efficiently capture and clean methane to produce transportation fuels and built to 'store' certain municipal solid waste and nonhazardous industrial wastes for current and future beneficial re-use applications" (unsupported).	To clarify, Promontory will install a solar microgrid to power the Promontory Point Landfill site. Also, Promontory will install a gas-collection system to capture the methane generated by the landfill. In the future, when enough gas is generated, the methane will be cleaned and used as a transportation fuel. Because of the size of the Promontory site, there is opportunity to segregate waste, stockpile inert materials for reuse, and implement other waste-processing technologies to recover embodied energy.
32.	Subsection 10B: The energy and resources recoverable by the proposed facility;	Although the report presents some information on methane recovery and the facility's ability to "store" certain wastes for re-use, it should provide additional information on storage, treatment, and potential methane generation.	In addition, the report states that captured gas will be used to generate electricity "as well as cleaned and compressed to manufacture transportations fuels and power natural gas fueled vehicles" (unsupported).	See response to comment #31
33.	Subsection 10B: The reduction of nonhazardous solid or hazardous waste management methods, which are less suitable for the environment, that would be made possible by the proposed facility;	Although the report briefly mentions recovery techniques, it lacks a discussion of waste reduction management methods.	The report states that the facility "will be a state-of-the-art disposal and materials management center, operated by highly experienced personnel, who will ensure proper disposal, recovery and tracking of industrial waste entering the site" (unsupported).	Given its Class I permit, Promontory meets all solid waste facility siting and design standards in R315. See Permit Application (March 2017) materials. Promontory leadership has vast experience operating landfills. They have in excess of 100 years of industry experience. Leadership biographies are presented in the *Needs Assessment Report Addendum*. Waste reduction management methods are driven by state and local policies. Promontory does not change these policies. Landfilling is an environmentally safe and responsible waste disposal method. The Promontory Point Landfill does not preclude any waste reduction methods.

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34.	Subsection 10B: Whether any other available site or method for the management of hazardous waste would be less detrimental to the public health or safety or to the quality of the environment.	This requirement is not applicable. Although the proposed facility does intend to take "Cal-Haz" waste, it will not accept federally regulated hazardous waste.	The report states that hazardous waste, as identified and regulated under the *Code of Federal Regulations*, Title 40, Part 261, "will not be accepted for disposal at Promontory Point Landfill."	Comment noted
35.	Subsection 10C: Compliance history of an owner or operator of a proposed commercial nonhazardous solid or hazardous waste treatment, storage, or disposal facility, which may be applied by the director in a nonhazardous solid or hazardous waste operation plan decision, including any plan conditions.	Additional information is needed to confirm that facility owners/upper management have no history of non-compliance (i.e., resumes or work history of founders and senior leadership).	The report mentions that "the founding partners and senior leadership of Promontory Point Resources, who will manage the site, do not have any record, notice of action of noncompliance violation with the State of Utah (or any other State), Local or Federal Local Enforcement Agency ('LEA') or agency regarding compliance with nonhazardous and/or hazardous waste treatment, storage or disposal facility" (unsupported).	The Needs Report Addendum contains leadership bios and Promontory can provide resumes upon request.
36.	Subsection 11A: The probable beneficial environmental effect of the facility to the state outweighs the probable adverse environmental effect;	Although the report describes several facility attributes demonstrating beneficial environmental impact, much of this information lacks needed detail. The report also fails to include potential adverse environmental impacts.	The report lists several positive attributes (synthetic liner to protect groundwater, storage of certain materials for re-use, rail line usage to reduce truck vehicle miles traveled and emissions, etc.) (unsupported).	See complete permit application for details of Promontory Point Landfill's design features and environmental monitoring procedures. In addition to the Class I and Class V solid waste permit (requiring environmental protections and monitoring), Promontory will secure air quality and stormwater permits for construction and operation of the landfill, all of which are in place to protect the environment. DWMRC staff have visited the site and observed construction. A construction certification is pending

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				to prove that the construction was performed according to the plans and specifications in the Class I landfill permit. Regarding the potential to reduce truck vehicle miles traveled, gondola railcars have nearly 5 times the capacity of tandem axle tractor-trailers. Assuming 100 tons per railcar capacity, a unit train can carry almost 100 railcars or 10,000 tons. Assuming 25-ton payload for a tractor-trailer, one unit train would replace 400 tractor-trailers.
37.	Subsection 11B: There is a need for the facility to serve industry within the state	Although the report states that there is a need for the facility, it does not provide sufficient information to support that claim.	The report reiterates the need for the facility to serve industry and points to the facility's proximity to rail as a competitive advantage.	See previous responses
Response to Comments contained in SC&A Report Appendix B				
38.	Pg. 3, Paragraph 4	"Seven permitted Class I landfills within Salt Lake region that accept MSW within a fifty-mile radius of Ogden and two Class V landfills"	Confirmed for current landfills, but SC&A identified an additional landfill ("Logan City North Valley") which is set to open in Fall 2017. Also, noticed a discrepancy as Salt Lake Landfill is classified as Class V in the report but is a Class I landfill. Source: **Logan City North Valley** - North Valley Landfill (2016), http://www.loganutah.org/government/departments/environmental/landfill/north_valley_landfill.php **Salt Lake** - 2016 Annual Report	Logan City North Valley is a Class I facility taking waste from Cache County communities exclusively. (source: 2013 permit application)
39.	Pg. 3, Paragraph 5	"Two of the current Class I landfills will soon reach capacity. Reported tonnage disposed in 2015 at both facilities was 250,070 tons."	Logan City Landfill does have a remaining capacity of 5 years but it is building a new facility. The next lowest landfill in terms of capacity is	2015 Data Logan City – 77,770 MSW and 35,341 C&D Trans Jordan – 287,622 MSW and 24,298 C&D

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			Trans Jordan Cities (15 years). Unable to confirm tonnage as the report does not name the facilities. Source: **Logan City** - Carl Francis, Landfill Manager for Logan City Landfill, **Trans Jordan Cities** - 2016 Annual Report	
40.	Pg. 4	"Waste generation per person per day was 4.44 pounds."	Content is correct from source and source is valid. However, this claim does not account for waste generation trends that show a leveling off and overall decrease in waste generation per capita since the 1980s. Source: **Source provided** - U.S. EPA, Advancing Sustainable Materials Management: 2014 Fact Sheet, November 2016, page 2. **Trends source** - U.S. EPA, Municipal Solid Waste Generation, Recycling and Disposal in the Unites States: Facts and Figures for 2012, https://www.epa.gov/sites/production/files/2015-09/documents/2012_msw_fs.pdf	No material decrease in per capita waste generation trends. Source data is 2012 and overall economy has picked up sense that time. Recent reports from CalRecyle and calculations from Salt Lake and Utah County indicate total land disposal is closer to 6 pounds per capita per day. See the *Needs Assessment Report Addendum*.
41.	Pg. 4	"Population of the Northeastern Region will increase by more than 60% by 2060."	Content is correct from source and source is valid. However, largest percent change in population growth expected to be south of this region; Washington County and counties along the Wasatch Front (Utah, Wasatch, Tooele, and Summit) projected to experience the largest	Wasatch Front communities will generate the most waste (from a total tonnage standpoint) for the foreseeable future.

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			percentage change between 2010 and 2050. Source: **Source provided** - Governor's Office of Management and Budget, Economic Analysis & Demographics, http://gomb.utah.gov/budgetpolicy/demographic-economic-analysis/ **Population Growth Source** – Utah Foundation	
42.	Pg. 5, Paragraph 5	"Promontory Point Landfill is believed to be the only major United States Class I, Subtitle D landfill located directly adjacent to the main trunk of the Union Pacific Railroad line."	More information on site location is needed to confirm rail access. In addition, report implies direct truck access but information is also lacking.	Conversations with Union Pacific have been occurring for many years. Union Pacific has define the track design standards and is currently reviewing preliminary track plans. In the future, rail access to Promontory Point Landfill could encourage other government entities in Utah to rail haul to the landfill even under its current Class I landfill designation. The Promontory Point Landfill is accessible by a Box-Elder County designated Class B road. See Appendix L-2 of the permit application, which is approval from the Utah Department of Transportation, and Appendix L-3, which is a traffic impact study submitted to Box Elder County and which was approved with Promontory's conditional-use permit from the county.
43.	Pg. 6, Paragraph 2/3	Senior leadership team has "over one hundred-fifty years of combined waste industry experience."	Unable to confirm as website only provides bios for four team members. Source: PPR website: http://www.promontorypt.com/meet-us/	Additional bios are provided in the *Needs Assessment Report Addendum* and resumes can be provided. Current website: https://allosenv.com/our-team
44.	Pg. 6, Paragraph 2/4	PPR will have "largest capacity of any Class I or V facility in Utah."	ECDC Environmental LLC has greater capacity in terms of tons. Source: ECDC	Comment noted. The capacity of ECDC, as reported by SC&A, was not verified. Promontory Point Landfill offers a more

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			Environmental 2016 Annual Report (provided by Darin Olson of Republic Services)	convenient disposal option for Utah's northernmost communities.
45.	Pg. 7, Paragraph 2	"Despite the availability of capacity at existing Class I landfills in the Greater Salt Lake Area, the cost of transportation and disposal is relatively high compared to what Promontory Point Landfill can offer local communities for disposal of their residential waste."	Able to confirm average cost of disposal for municipal solid waste for Class I landfills in the region, but lacking PPR prices for comparison.	Promontory prices are proprietary as are other regional commercial facilities. Promontory would not be investing in the project if it and its investors did not believe they could offer competitive pricing that could attract waste to Promontory Point Landfill.
46.	Pg. 8, Paragraph 2	"Moving soil to one of the two Subtitle C landfills in California is cost prohibitive. The estimated cost to transport waste over the three-hundred-mile roundtrip route from Los Angeles to the closest landfill is approximately forty dollars ($40) per ton. Including the approximate disposal fee of eight dollars ($80) per ton, the expected all in pricing per ton is estimated to be approximately one hundred- twenty dollars ($120) per ton"	External source estimates disposal fee to be closer to $60 per ton, including taxes, for remediation waste. Source: **Rob Heller**, Director of Landfill Sales in Southern California for Waste Management	SC&A example provides support for Promontory's cost effectiveness. Assuming $3.00 per mile waste haul (GBB 2017) in 25-ton tractor- trailers, a 300-mile roundtrip equates to about a $36 per ton hauling cost and a $96/ton total cost (assuming $60/ton disposal fee). These values are very close to the values reported in Promontory's *Needs Assessment Report*.
47.	Pg. 9, Paragraph 1+	Table 3: Waste Generation in Northern and Southern California 2014-15	Estimates of overall soil and ash generated in California do not match estimates in the report. More information on the report's method of calculation is needed to confirm. Source: **Hazardous Waste Tracking System (HWTS) -**	The totals provided in the *Needs Assessment Report* are from Promontory's research. The report acknowledges that it is not a comprehensive list compared to the references provided by SC&A. Note that the SC&A referenced CalRecycle Report references 2008 data so it would not match 2014-2015 estimates in Promontory's *Needs Assessment Report*.

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			http://hwts.dtsc.ca.gov/report_list.cfm **CalRecycle** - https://www2.calrecycle.ca.gov/WasteCharacterization/PubExtracts/2014/SigTableFig.pdf	
48.	Pg. 9, Paragraph 3+	Table 4: Annual Coal Ash Generation along the Western Union Pacific Railroad System	Unable to confirm with the information provided. Source: Obtained average coal ash generated per power plant (https://www.epa.gov/coalash/frequent-questions-about-coal-ash-disposal-rule#2) but unclear how exactly the report calculated these numbers	See response to comment #21.
49.	Pg. 10, Paragraph 1+	Table 5: Estimated On-site Coal Ash by State	Unable to confirm with the information provided. Source: Obtained average coal ash generated per power plant (https://www.epa.gov/coalash/frequentquestions- about-coal-ash-disposal-rule#2) and estimates of total ash that gets disposed on site (https://www.epa.gov/coalash/frequentquestions-about-coal-ash-disposal-rule#3), but unclear how exactly the report calculated these number	See response to comment #21.
50.	Pg. 10, Paragraph 2	"A gondola railcar has a maximum weight capacity of one hundred-ten tons, almost five times the capacity of an over the road tractor-trailer combination."	Weight capacity can vary, sources confirm that, in general, railcar maximum capacity is larger than that for a tandem axle. Source: **Railcar** - https://www.up.com/	Comment noted. See also response to comment #36.

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			customers/all/equipment/descriptions/gondolas/index.htm **Tandem axle -** https://ops.fhwa.dot.gov/freight/sw/overview/	
51.	Pg. 11, Paragraph 3	"While regional tipping fees for commercial customers average approximately $30 per ton, transfer and transport can increase the total amount of disposal past $40 per ton."	The average regional tipping fees are consistent with facility websites ($30). Unable to confirm transport information with information provided.	Regarding tipping fees, comment noted. A $10 per ton hauling is approximately equivalent to an 83-mile round trip (at $3 per mile and 25-ton capacity tractor-trailer). Assuming a 40-ton capacity, a 133-mile round trip would cost about $10/ton (at $3/mile). The *Needs Assessment Report Addendum* contains additional information on transportation costs.
52.	Pg. 11, Paragraph 5+	Table 7: Waste Steams Available for Disposal at Promontory Point Class V Landfill	Need to confirm Table 7 as it summarizes waste volume generation from key sources, based on values presented previously in this table.	Table 7 of the *Needs Assessment Report* presents a summary of waste volumes potentially available to Promontory. The sum of annual tonnage (not including coal ash) equals 2,786,700 tons. Promontory can be operational and financially viable with only a fraction (5 to 10%) of this annual tonnage. Assuming 15% to 20% (200,000 to 300,000 tons per year) makes Promontory's operation equivalent to the larger landfills in northern Utah (Wasatch Integrated, Bayview, Trans Jordan, Salt Lake Valley).